



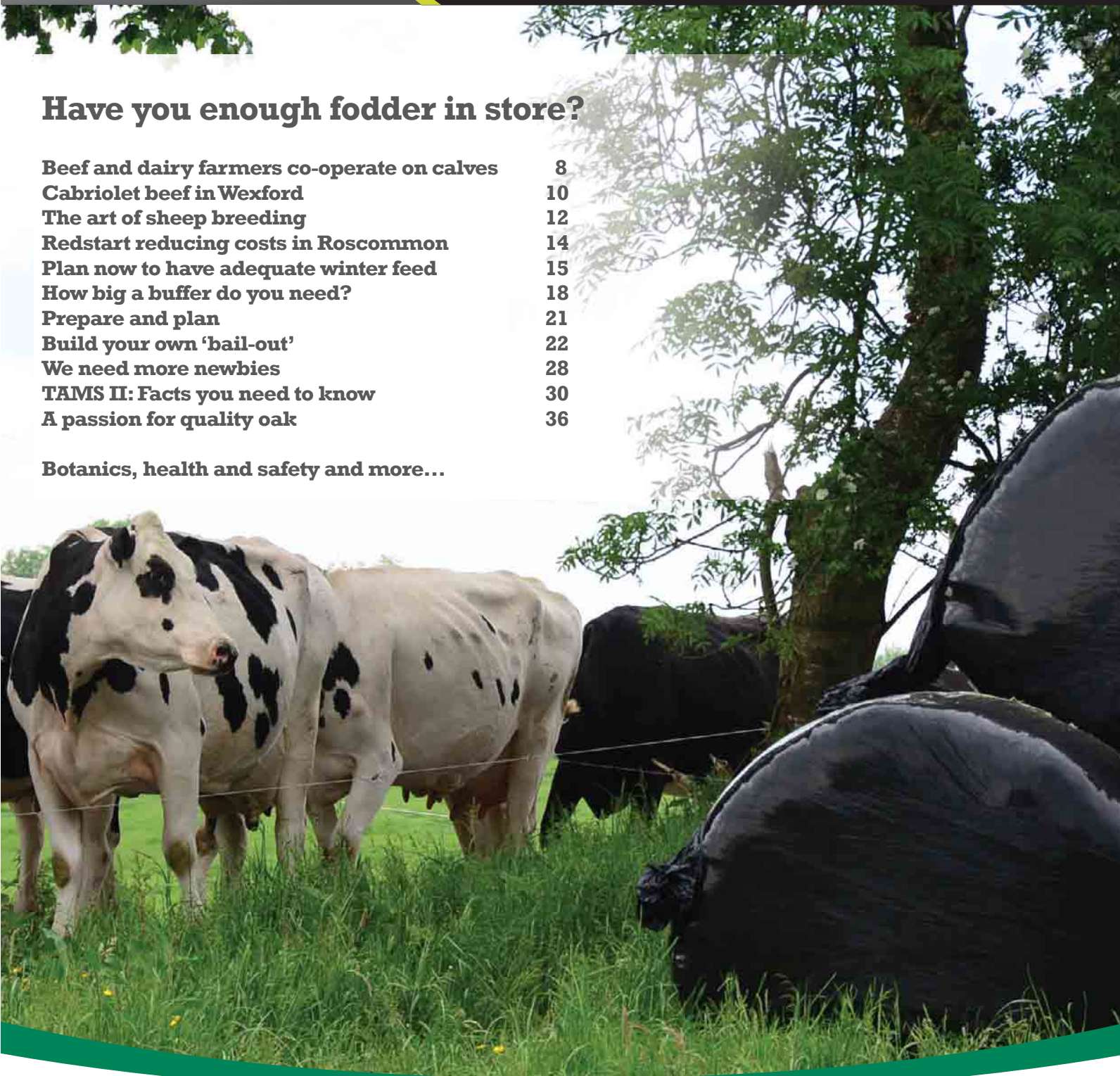
Today's Farm

Business, production, environment and countryside issues www.teagasc.ie

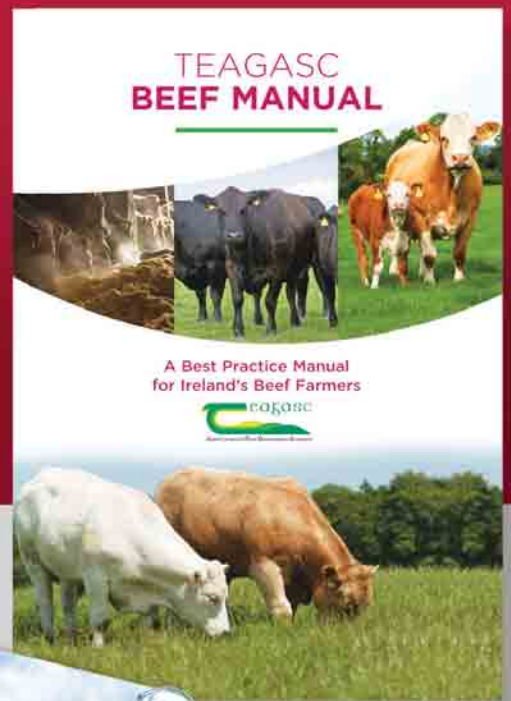
Have you enough fodder in store?

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Botanics, health and safety and more...



TEAGASC BEEF MANUAL

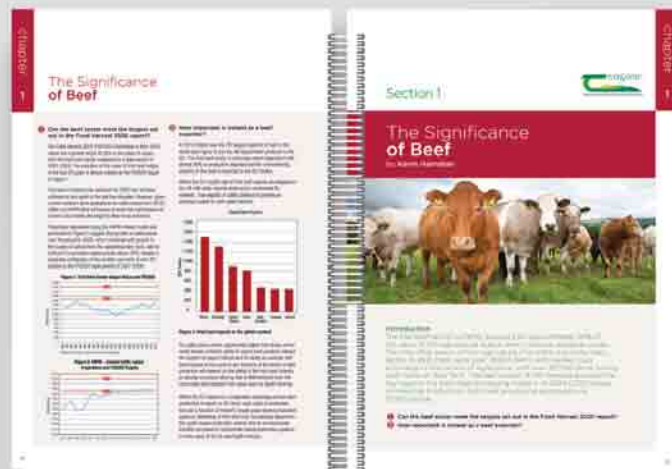


A comprehensive source of practical advice for any beef business.

- Beef Farming
- Farm Business Management
- Beef Systems
- Breeding
- Soils & Environment
- Nutrition
- Animal Health
- Infrastructure

These sections are further divided into a total of 52 chapters with titles such as: Taxation, Making Money from Bought In Cattle, Winter Facilities, Feeding the beef Cow, Managing Your Grass, Replacement Heifer Management etc.

The information within each chapter is built on feedback from farmers and is laid out as Questions and Answers, How-to's, Key Performance Indicators, Key risks, etc. making the Manual extremely easy to read and use. The Manual will be of particular interest to anyone planning to expand over coming years.



A must for anyone with an interest in beef farming the 310-page Manual is produced using tear-proof, water-proof paper for real world conditions.

The Teagasc Beef Manual is available at Teagasc offices for €50. For a limited time Teagasc clients can purchase copies for €25.

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COMMENT



Mark Moore
Editor,
Today's Farm

How much fodder reserve is enough?

It's been an unusual spring. Cattle which were licking cold concrete at the back of empty silage pits in April were sweltering in the heat in early June. Grass growth soared in May largely compensating for the cold wet spring. You may well have made good quality first cut silage but with reserves largely wiped out we focus in this edition on restoring a buffer stock. But let's not learn the wrong lesson. Grazed grass is the best feed and early turn out will remain key to profitability. But having a healthy reserve is always prudent.

Cá mhéad a bheidh ag teastáil i ndáiríre?

San eagrán seo táimid ag díriú ar fhodar: cén chaoi ar féidir leat a chinntiú go mbeidh do dhóthain agat don gheimhreadh agus cá mhéad ba chóir duit a chur i leataobh i ndáiríre? Is léir go bhfágann rátaí stocála agus athruithe ar an aimsir (ar an aeráid féin, b'fhéidir) gur beag an lamháil earráide atá ann na laethanta seo. Má dhéantar go maith agus má chosnaítear le scannán plaisteach iad, mairfidh burlaí sadhlais dhá bhliain ar a laghad. Fanfaidh sadhlais claise a dhéantar go maith idir chothaitheach agus bhlasta go ceann cúig bliana nó níos mó. Má tá an deis agat, cuir oiread agus is féidir i dtaisce.



FODDER FOCUS
When you have a shortfall, concentrate feeds can play a role
See page 24

Today's farm is a bi-monthly publication produced in a joint venture between Teagasc and the Agricultural Trust, publishers of the Irish Farmers Journal and The Irish Field.

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All editorial enquiries to: Teagasc, Oak Park, Carlow
Tel: (059) 917 0200 Fax: (059) 9183498
e-mail: mark.moore@teagasc.ie | web: www.teagasc.ie

All advertising enquiries to: Shane O'Grady, IRN Publishing,
First Floor 121-123, Ranelagh, Dublin 6
Tel: (01) 412 7828 E-mail shane.ogradey@irn.ie

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Cover | This cow is glancing over to see if there are enough bales in store for winter (Mar dhea). But on a serious note, replenishing fodder reserves is crucial and we focus on the topic in this edition.

THURSDAY, 05 JULY 2018

College Open Day, Kildalton

- The rescheduled Kildalton Open Day will be on July 5th
- **Venue:** Teagasc, Kildalton Agricultural & Horticultural College, Piltown, Co. Kilkenny. E32 YW08

Kildalton Open Source Sustainable Dairy Farm Open Day

- **Venue:** Kildalton Agricultural College, Piltown, Co. Kilkenny
- **Event Time:** 10 AM

SATURDAY, 07 JULY, 2018

Sheep2018: Farm to Fork

- **Event Time:** 10am
- **Venue:** Teagasc, Mellows Campus, Athenry, Co. Galway
- Sheep 2018: Farm to Fork' is the major sheep event in Ireland this year and takes place in Teagasc, Mellows Campus, Athenry, Co. Galway on Saturday, 7th July 2018 starting 10.00am and finishing at 6.00pm. Sheep 2018: Farm to Fork, is proudly supported by Irish Country Meats, and is organised by Teagasc, Department of Agriculture, Food and the Marine, Galway County Council, Sheep Ireland, Bord Bia, UCD, and Irish Farmers Journal. Admission is Free. This year, to tie in with Galway having been awarded the European Region of Gastronomy designation, there will be a significant emphasis on food. This will be hosted in a specially designated Food Village. Teagasc has linked up with Bord Bia and Galway County Council for this aspect of the event.

TUESDAY, 10 JULY 2018

International Agricultural Workforce Conference

- **Event Time:** 9am
- **Venue:** Radisson Blu, Cork
- The following themes will be focused on:
 - Putting in context International and Irish farm labour situations
 - Labour efficiency
 - Milking technology and process efficiency
 - People management on dairy farms

Conference Agenda

- **08:30** Registration and refreshments

- **09:00** Opening and introduction of Minister for Agriculture, Food and Marine - Prof. G. Boyle, Teagasc
- **09:15** Minister Michael Creed
- **Session 1:** Putting in context International and Irish farm labour situations - Chaired by TJ Flanagan, ICOS
- **09:40 – 10:05** International trends in farm labour demand and availability — Dr. Ruth Nettle, University of Melbourne, Australia
- **10:05 – 10:25** Irish studies on farm labour issues — Dr. Bernadette O'Brien, Teagasc
- **10:25 – 10:45** Irish dairying – rapid expansion, structural change and future plans — Mr. Paidi Kelly, Teagasc
- **10:45 – 11:15** Discussion
- **11:15 – 11:45** Break and refreshments
- **Session 2:** Labour efficiency - Chaired by Prof. Jim Kinsella, UCD
- **11:45 – 12:05** Work organization and productivity — Dr. Nathalie Hostiou INRA, France
- **12:05 – 12:20** Using LEAN principles to improve labour efficiency on dairy farms — Mr. Pat Ryan and Mr. Patrick Shine
- **12:20 – 12:45** Panel discussion with Dr. Hostiou (INRA), Dr. Marion Beecher (Teagasc), Mr. Joe Ahearne, (Leading Edge), Mr. John Paul Murphy (Dairygold), Mr. Pat Ryan and Mr. Patrick Shine
- **12:45 – 14:00** Lunch
- **Session 3:** Milking technology and process efficiency - Chaired by Mr. Eddie O'Donnell, Co. Tipperary
- **14:00 – 14:30** Factors impacting on milking efficiency — Dr. John Upton, Teagasc
- **14:30 – 14:50** A herringbone or rotary milking parlour? – A farmer's perspective — Mr. Pat Hickey
- **15:50 – 15:20** Discussion
- **15:20 – 15:35** Break and refreshments
- **Session 4:** People management on dairy farms - Chaired by Dr. Tom O'Dwyer, Teagasc
- **15:35 – 16:05** Lessons from a rapidly expanded industry in New Zealand — Dr. Callum Eastwood, Dairy NZ, New Zealand
- **16:05 – 16:25** Study of dairy human resource management practices — Dr. Ruth Nettle, University of Melbourne, Australia
- **16:25 – 16:40** Effective management of staff time and well-being – A farmer's perspective — Mr. Mark Cassidy
- **16:40 – 17:00** Discussion
- **17:00 – 17:15** Conference close

and take home messages

Further Information

- For further information please contact Niamh.allen@teagasc.ie or +353 (0)25 42458

TUESDAY JULY 17

Teagasc/Irish Farmers Journal BETTER Farm Beef Challenge Open Day - Wicklow

- **Venue:** Brian Doran Croneyhorn, Carnew, Arklow, Co. Wicklow Y14 AH01
- **Event Time:** 12 PM

WEDNESDAY, 18 JULY 2018

Young Breeders Training Day - Tiernan Gill

- **Venue:** Tiernan Gill, Church Road, Ballina, Co. Mayo
- **Event Time:** 10:30am

Organic Demonstration Farm Walk Wicklow

- A nationwide series of national organic farming open days will take place from Autumn 2017 to Summer 2018.
- **Venue:** Oliver Kelly, Kiltegan, Co. Wicklow Eircode: W91 V522
- **Event Time:** 2pm

THURSDAY, 19 JULY 2018

Teagasc/Irish Farmers Journal BETTER Farm Beef Challenge Open Day - Galway

- **Venue:** Nigel O'Kane, Caraun, Claragalway Co. Galway H91 k862
- **Event Time:** 12PM

WEDNESDAY, 25 JULY 2018

Organic Demonstration Farm Walk Kildare

- A nationwide series of national organic farming open days will take place from Autumn 2017 to Summer 2018.
- **Venue:** Nurney Farm Organics, Carbury, Co. Kildare Eircode: W91 FK11
- **Event Time:** 2pm

Promoting total health

Dr John McNamara
Teagasc Health and Safety Specialist

Farmers between 16 and 65 are three times more likely to die of cancer than people doing comparable work in other parts of the economy. Even more shocking is that farmers are five times more likely to have cardiovascular disease (CVD) and seven times more likely to suffer injury than comparable non-farming workers.

Health and safety behaviour

Both health and safety have strong behavioural dimensions. Each person is in the driving seat and can influence health and safety outcomes.

Farm safety focuses on preventing situations where an energy source suddenly injures the body (e.g. a blow or PTO entanglement, etc.), or stops a bodily function e.g. breathing.

Poor health, by contrast, generally develops gradually and can be influenced by health behaviours.

The principal health conditions associated with farm work are musculoskeletal conditions and arthritis, respiratory conditions and infections.

Mental health

Major farm stressors include financial worries, long working hours and poor working conditions.

Over time, such stressors wear people down and reduce their mental health. Farm work accidents are more likely under stress, so good mental health helps prevent accidents.

It is important to recognise signs of stress and to target their source. Seek support from agricultural advisors for farming problems and health professionals for health issues.

Maintain both work life-balance and social support, as these play a vital role in maintaining mental health.

Farm management

Health and safety management links with overall farm management. Good farm management involves removing hazards on an on-going basis, managing time to reach a balance between work, rest and leisure.

Farmers' health findings

A recent Irish study by Teagasc PhD Walsh Fellow Ms Diana Van Doorn and colleagues reported that farmers under 45 are more likely to report harmful health-related behaviours such as smoking, binge drinking and



Discussing details of a new four-year farmers' health study were: Front (l-r): Ms Diana von Doorn (Walsh Fellow – Teagasc / IT Carlow), Professor Gerry Boyle (Director of Teagasc), Ms. Audrey O'Shea (Sustainability Manager - Glanbia). Back: Dr. Catherine Blake (UCD), Dr. Aoife Osborne (UCD), Ms. Paula Rankin (IT Carlow), Dr. David Meredith (Teagasc), Dr. John McNamara (Teagasc), Dr. Noel Richardson (IT Carlow), Ms. Janice Morrissey (Irish Heart Foundation), Ms. Marese Damery (Irish Heart Foundation).

Farm safety

Manage the farm safety of your business by completing the HSA risk assessment document. It is a legal requirement to have the new green-covered version completed by 31 December next.

Health booklet

Health booklets for farmers are available by searching for health and safety at www.teagasc.ie

non-use of health check-ups. Older farmers (45 years+) reported higher levels of health check-ups, but the level was lower than the national average among Irish males. The older farmers were significantly more likely to report arthritis.

Overall, the study indicates that all farmers, but particularly younger farmers, should give their health more attention.

Also, farm conditions associated

with arthritis and musculoskeletal disorders, such as heavy lifting and pushing and pulling, should be minimised.

New farmers' health study

A new four-year study has commenced to study approaches to assisting farmers to improve their cardiovascular health. The study will be conducted by Ms Van Doorn at the Centre for Men's Health at IT Carlow. The study is supported by Glanbia Ireland, Irish Heart Foundation, the Health Service Executive and the UCD College of Health and Agricultural Sciences.

Assisting the farming community to improve health and safety is a key objective for Teagasc. The research will provide opportunities for farmers attending marts in 60 locations throughout Ireland during 2018 and 2019 to undertake a health screen test and, if they choose, to participate in the study which will seek to support them to achieve their healthier lifestyle goals.

The Teagasc UCD Michael Smurfit course in business strategy

The best defence against the increasingly volatile environment in which farmers must operate is to have your own unique strategy which will ensure you remain focussed on what you and your family really want out of your business...and life.

Emer Howard, who farms beef and other enterprises near Fermoy, describes how she and her husband were waiting, a little anxiously, to put a business proposal to their banker. "What transformed the situation was that we had a written strategy and we were able to talk about it in the banker's language," she says. "Another advantage is that we had negotiation skills which resulted in us getting virtually everything we wanted from the discussion."

Emer credits the Teagasc/UCD Michael Smurfit course in business strategy with helping her develop skills in investment appraisal, negotiation, and in particular strategy formulation which have benefitted her farming business.

Tommy Cooke, a dairy farmer, near Thurles identifies negotiation skills as the greatest benefit he got from the course. "As farmers we negotiate a lot and we often feel we are expert negotiators but there are skills and techniques which I certainly didn't know about before doing the course," says Tommy.

"By learning about my own strengths and weaknesses I was able to take steps to counter them and my farming and other business activities have benefitted substantially."

This is not a course in production farming. It aims primarily to give participants the skills to formulate a strategy which will benefit not only

their businesses but their family lives too. "The idea is for participants to identify where they want their businesses and their lives to be in say three, or five years' time," says Prof. Pat Gibbons of the UCD Michael Smurfit Business School.

"And that might include what kind of work/life balance they and their families want. The course gives participants the tools to create their own unique, strategy to get them from where they are now to where they want to be. Teagasc advisors assist participants to interpret the course material for their own unique situations, but the farmer does the work."

Managing, communicating and interacting with people whether family or employees is crucial to the success of any strategy. "Everyone is unique in how they see the world and how they react to different work and social or family situations," says Helen Brophy, Director, Director, Smurfit Executive Development. "Participants on the course complete a detailed, and completely confidential, questionnaire which is analysed and gives them an insight into their own personalities and how that might influence how they interact with others."

"As farmers we are all interacting more with employees and students as well as family stakeholders," says Frank Clare who farms near Navan in county Meath. "I felt that part of the course was extremely interesting and practical."

There is no requirement for academic qualifications to join the course providing you have been farming in your own right for ten years or more. Participants must complete a written strategy for their own business.



They will gain the skills to do this during the course and will be supported by Teagasc mentors between the course modules. The two modules are residential, in order to enable participants to get away from day to day chores and get the very most out of the course.

"It's nothing like I remember from school," smiles pig farmer Jason McGrath. "This is really a discussion between farmers as business people about business issues, facilitated by really top lecturers. I found it really useful and there was excellent networking and interaction between the participants. It was also a very enjoyable experience."



Alumni of the Teagasc UCD Michael Smurfit course in business strategy.

Almost 100 farmers in five cohorts have now graduated from the fully accredited course and earned the level 8 certificate from UCD. Each participant must develop their own strategy and this involves discussing the future of the business with other stakeholders, particularly family members.

All ages and enterprises have been represented. Last year Darren and Kalinda Healey from county Wicklow became the first married couple to do the course together. "My father Eamon did the course himself and recommended that it might be useful for us too," says Darren.

"It meant that we were learning

Module 1	
Introduction	Tues 25 September
Day 1	Wed 26 September
Day 2	Thurs 27 September
Module 2	
Day 1	Tues 16 October
Day 2	Wed 17 October
Finale Day	Tues 27 November

working on the strategy together which proved really useful."

The cost to participate in the course is €2,400. The course is not restricted to Teagasc clients but they do receive a €200 discount. The fee covers the

course itself and also accommodation and food etc during the course. Some participants have been able to secure support from IFA Skillsnet. "Farmers never fear to spend money when there's a return to it," says Tommy Cooke. "Like every other profession we need to be constantly challenging ourselves and moving forward if we want to be competitive.

A number of farmers have already signed up for the next course which will take place in the autumn (see dates in fig.1) but places are still available. If you would like to know more or to register your interest please contact me at Mark.moore@teagasc.ie or call 087 4179131.

Beef and dairy co-operation

Where drystock farmers work closely with dairy colleagues to focus on calf quality, there are benefits for both

John Bergin
Teagasc drystock advisor,
Newcastlewest

John Nash farms 88ha in Palskenry with his sons Thomas and Padraig, who both work off farm. Their land is dry but fragmented into six separate blocks. In 2012, John had 76 suckler cows and as he says: "I was very busy, often having to get up at four in the morning to calve cows." Never afraid of hard work, John considered that safety issues and the overhead costs associated with carrying sucklers were significant disadvantages.

In 2017, John decided to buy 42 dairy-bred calves from a neighbouring dairy farmer. "The calves I bought were a mixture of Whiteheads, Angus and Limousin and were both heifers and bulls," says John. From the start, John was very pleased with his decision to buy dairy-bred beef calves. "We aim to get cattle out to grass early and when the slatted houses are free we can use them to house bought-in calves," he says. This has worked well for John as the sheds are well-ventilated and no additional facilities had to be built for the extra calves. The main reasons John decided to buy dairy-bred calves were:

- The reduced amount of work compared with sucklers.
- Buying quality replacements was becoming very expensive.
- He did not have the calving facilities



John Nash and Teagasc advisor John Bergin

to calve a high number of cows.

Peaking with 76 cows in 2012, John has reduced his suckler number in recent years. In 2017, he calved down just 54 and this year calved 45. This has allowed him to cull his poorly performing suckler cows and has left him with a more productive herd.

John finishes all of the stock from the suckler herd so he has always had to buy in replacement heifers. John says: "I was paying €1,600 for replacement heifers, and if something happened to the calf during calving, things became very expensive whereas now that €1,600 can buy a lot of young calves."

John has built a close relationship with a neighbouring dairy farmer John O'Shaughnessy and sources all of his calves from that farm. This has many benefits for both Johns:

- Time saving for the seller and the buyer.
- Less risk of disease spreading for John.
- Both parties have no commission to pay in the mart.
- Major labour saving for the dairy farmer as he can sell calves at a very young age.

"Buying a large number of calves from one source has resulted in excellent animal health benefits for us," says John. "We've only lost one calf in the last three years." In his third year of buying calves, John admits he is still learning. "One area where we are now more selective is in the calf we pick. We have noticed there can be massive variation between bulls even within the same breed."

A study by Teagasc and ABP in 2015 showed there was a margin of up to €200 for key economic carcass traits depending on sire selection within breeds. John is well aware of the difference and this year he sat down with his neighbouring dairy farmer and they jointly picked the AI straws together. "The bulls that I have been happy with in the past, and picked with John O'Shaughnessy, were ZAG, KYA and Kentucky kid," says John Nash. The arrangement benefits both sides with John O'Shaughnessy getting a slightly better price for his calves and John Nash ending up with a better quality calf to finish. John's plan in the future is to buy up to 70 calves a year and to finish all stock himself.



Rose and Basil Fitzsimons, Moig East, Askeaton, Co Limerick

Another couple who have been taking advantage of dairy-bred beef calves in their local area and of existing facilities on their farm are Rose and Basil Fitzsimons of Askeaton. Rose and Basil farm 150 acres of dry land, which is split into two blocks a couple of miles apart.

Dairy farmers for many years, they got out of dairying in 2008 and bred suckler replacements from their dairy herd. After a few years of suckler farming, Rose and Basil changed their system and ventured into buying dairy-bred beef calves.



Basil and ROse Fitzsimons with Teagasc advisor John Bergin

"We now buy 70 calves a year, both bulls and heifers at two to three weeks of age," says Basil.

"We source their calves from as few farms as possible to minimise the risk of disease; we only buy calves from farms."

Basil continues: "At first I was going to the mart to buy calves and after a long journey to Kilmallock Mart I was sometimes only ending up with one calf, so buying directly from farms is a major time-saver."

Like John Nash, they have built up a strong relationship with the farmers they source their calves from and they buy off the same farmers each year. They also like to buy good early February calves and tend not to buy calves after St Patrick's Day.

The breeds the Fitzsimons bought this year included Charolais, Hereford, Sim-

mental and Angus crosses. "After buying calves for a number of years now, there are a number of things that have worked really well for us," says Rose:

- Before calves come off the trailer, they get a 1ml Zuprevo vaccination.
- After 21 days, calves get Respichlor for treatment of respiratory disease.
- Milk mixed in the morning also does for the evening feed.
- They clean out the calf houses each morning.
- They are very selective and will buy only very square calves from farms.

Rose and Basil have only lost one calf in their seven years of calf rearing and they credit this to the regular cleaning of the calving pens and to the attention to detail in rearing their calves.

Like John Nash, the Fitzsimons had no additional housing to build when changing systems to rearing calves.

Rose and Basil even converted the old milking parlour to a calf house.

"We bought new pig slats and cut them to fit over the pit of the milking parlour," says Basil. The converted parlour can hold up to 25 calves at a time and the old collecting area works as an excellent run area for the young calves which also leads out to small paddock.

Conclusion

With the large variation in performance between individual beef sires, selecting calves with a higher genetic merit for beef traits will increase beef farmers' income through increased carcass sales, better carcass conformation and increased numbers of animals meeting the quality assurance and breed bonus specifications. By working closely with dairy colleagues, beef farmers can be drivers of this genetic change.

drystock

Cabriolet beef in the southeast

Finishing beef cattle on an unroofed slatted unit in Wexford

Kay O'Connell
Teagasc Drystock Advisor, Wexford

Paddy and Bridget Murphy, along with their son Padraic and daughter Sinead, finish up to 1,500 cattle each year on their farm near Arthurstown, in south Wexford. The animals consist of continental and early-maturing breeds with some Friesian cattle also finished.

Over three generations, they have tried several housing types and have settled on unroofed slatted units as the best to finish cattle in. Today, in their farmyard, you will see a the slatted unit built in the 1970s with a low roof and resulting poor ventilation, a slatted unit and a slatted shed with straw lieback built to grant specifications in 2007, in addition to the more recent addition of unroofed slatted units.

All are in use today, but the Murphys' preference is for the unroofed slatted unit. Paddy said: "I'd love to have another three of these and take down the roofed units."

Why? "We've found that the cattle are healthier on the unroofed slatted unit," continues Paddy. Many will argue that it depends on the conditions in the sheds you are comparing with. Paddy agrees but he has compared

the different sheds in his own yard and believes the unroofed slatted unit works best.

"We even built an outwintering pad but decommissioned it as we found managing it difficult in some weather conditions, in addition to the cost and disposal of woodchip," says Paddy.

The Murphys source stock from all over the southeast and buy direct from farms and from marts. Stock that have come from many different sorts of houses are mixed on arrival. "We have found that regardless of where they were previously the cattle that are put onto the unroofed slatted unit have less coughs and snots than those in the roofed slatted units which means they hit the ground running in terms of performance," says Padraic.

"I can come home in January or February with a load of cattle out of sheds, put them on the unroofed slats and don't have a bother... or on a mild, muggy morning in November/December I would nearly be afraid looking into the roofed houses as there will always be something coughing whereas the cattle outdoors on the slats are content and thriving."

Design

The Murphys have two unroofed units in place. The first was put in place four years ago with the most recent one added in 2017. It consists of a slatted tank 32m x 10.1m x 2.7m deep, with 2.4m high concrete walls around three sides with sliding doors at each end. A feed trough runs the length of



the tank. Metal cladding is pivoted on the bar above the feed trough to protect the feed from the weather.

The cladding can be bolted shut when the troughs are being filled with feed. There are three pens and the unit holds 120 finishing cattle which works out at 2.75m² per animal. This is within the Department of Agriculture, Food and the Marine recommended stocking rates for slatted housing which specify an animal area of 2m² to 2.5m² per animal >275 kg on slats (Table 1).

According to the Murphys, the key to the success of the unroofed slatted unit is shelter. The stock are sheltered on all sides which is very important. Slat mats are essential in Paddy's opinion: "Cattle don't mind what's coming down on top of them once they have comfort beneath them and they aren't in a draught."

Research shows that cattle spend about half of their day lying. Lying time can be from 60 to 80 minutes' duration with about 10 to 15 periods per day. How long an animal spends lying each time will depend on the housing environment but total lying time is fixed.

Paddy insists his cattle are cleaner on slats than they would be on straw –

Table 1: Department of Agriculture, Food and the Marine recommended stocking rates for slatted housing (no cubicles)

Livestock	Animal area (m ² per animal)
Dairy cows	4m ² per cow
Suckler cows	2.5m ² to 3m ² per cow
Sucker cows with calves	Allow 1m ² extra for spring born and 1.75m ² for autumn-born calves
Other cattle over 275kg	2m ² to 2.5m ² per animal
Smaller cattle under 275kg	1.2m ² to 1.5m ² per animal



Caption

unless very large quantities of straw were used. Researchers in Teagasc in Grange, Co Meath, recently did an analysis of 18 studies which looked at the effect of floor type on performance, lying time and dirt scores of finishing beef cattle.

They concluded that concrete-slatted floors are adequate housing systems for the performance of finishing beef cattle when compared with straw bedding. They also found that placing rubber mats on concrete slatted floors had no effect on performance, lying time or animal cleanliness.

However, they did conclude that further research examining different rubber mat types is needed. It must be noted that they were comparing roofed slatted houses. There appears to be little research done on unroofed slatted units.

As the Murphys' unit is unroofed, regulations require that all the rain that falls on the tank needs to be collected. The minimum slurry storage capacities required by legislation will vary from 16 to 22 weeks depending on where you are located in Ireland.

In Wexford, there is a requirement for 16 weeks' storage for slurry. Therefore, the additional storage required to account for rainfall when

compared with a roofed slatted tank is 151m³ (33,000 gallons). At a cost of €48.27/m³, the additional slurry storage capacity for not covering the tank would cost €7,288.

Roofs are costed at €50/m² but can range from €45/m² to €60/m², for

standard steel frame structures, built to conform to DAFM specifications. At €50/m² to roof, the Murphys' unit would cost approximately €16,000. For Paddy, the benefit is not the potential cost saving: "It's the improved health and performance of the stock in the unit – as we mentioned earlier they are less like to develop respiratory infections or pneumonia which means less treatment costs."

The provision of housing that meets all of the animal's requirements is one of the key factors to profitability on beef-finishing farms. Cattle should have access to water and feed to meet their needs, freedom of movement, sufficient light for normal behaviour, adequate ventilation and clean conditions. If any of these areas are inadequate, animal performance will be reduced.

For the Murphy family, unroofed slatted units are meeting these requirements. Regardless of the type you choose to build, when designing accommodation facilities for fattening cattle consideration should be given to labour availability, feeding system, type of diet, group size, drinking system, and facilities for handling and storage of the manures produced.



Padraic and Paddy Murphy with Kay O'Connell

Understanding the art of sheep improvement

Genetic values are constantly improving, like the animals whose breeding merit they reflect

Michael Gottstein
Head of Sheep Knowledge Transfer, Teagasc Animal and Grassland Research & Innovation Programme

Since livestock were first domesticated, humans have striven to improve their performance of by breeding the best with the best. That's why the livestock we see on farms around the world look very different from their ancestors that roamed in the wild. AI and embryo transfer techniques have allowed large numbers of progeny to be produced from superior males and females.

Over time, the efforts of dedicated livestock breeders have resulted in animals that grow faster, produce more milk or more offspring. While breeding for single traits such as increased growth rate or milk yield have been successful in the past, they have often resulted in unintended and undesirable attributes such as increased health problems, reduced fertility, reduced vigour or increased difficulties during birth.

The Irish Sheep Breed Improvement Programme, which is operated by Sheep Ireland, looks at multiple traits which are given different weightings within an economic index (EuroStar index). The reason for doing this is that you can select for desirable traits while not ignoring potentially negative ones.

For example, we want to select for lambs that grow really fast but don't have lambing difficulty and high levels of mortality, or we want to select females that produce lots of milk but have a low incidence of mastitis.

In order to get this information, the euroStar index evaluates not only the

information provided on the animal being evaluated but also looks at the performance of its relatives. This helps to establish whether superior (or inferior) performance is as a result of management or genetic issues.

Superior performance as a result of management (i.e. feeding, etc) is not passed on to the offspring by the ram or ewe, whereas superior performance, as a result of genetics, is passed on to the offspring so that they too will perform better.

In Ireland, to make it easier to understand the genetic indices, each index is given a star rating. The star rating shows where the predicted performance of that particular animal is, relative to the other sheep in that breed (linked flocks) or within that flock (unlinked flocks).

Unlinked flocks are flocks who have not shared rams with other flocks or had rams in the Central Progeny Test Programme. Therefore, the evaluation is really only comparing the sheep in that flock to the other sheep from the same flock and not with sheep in other flocks within the same breed. You cannot reliably compare the index of sheep from unlinked flocks with indices of sheep from any other flocks.

Sheep farmers who are purchasing rams should ensure that the ram comes from a linked flock. This means that the index represents the predicted genetic merit of that sheep when compared with all those recorded within that breed.

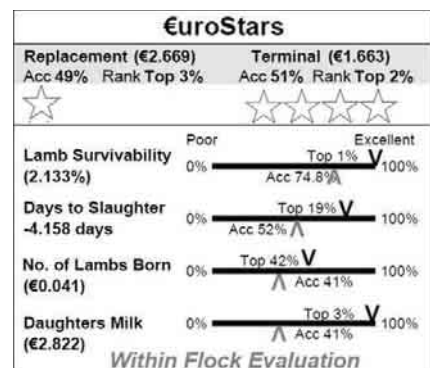
This year, Sheep Ireland has changed the way that indices are presented to help sheep farmers to identify sheep that come from un-



linked flocks. See the diagrams below – where evaluations are within the flock, the stars are not shaded and the box will contain the phrase “Within Flock Evaluation”.

Over time, indices will change. This is one topic which comes up frequently and it is one of the issues that is a constant source of annoyance for pedigree breeders and commercial farmers alike.

This year, Sheep Ireland updated the economic values and weightings to take into account results from recent



Sheep farmers who are purchasing rams should ensure that the ram comes from a linked flock.



Irish research. This has caused some re-ranking of animals but it has resulted in a more accurate reflection of the economic value of the genetic merit or index of these animals.

It is important to remember that indices will continually change as more information becomes available on the performance of an animal or its relations. Therefore, as an animal gets older, and has more progeny, the index will adjust to reflect the performance of those progeny and their relatives. In most cases the changes will be minor, but occasionally individual animals can fall, or rise, dramatically.

So why bother with indices if they are going to change?

Teagasc research consistently shows that high index sheep are more profitable than low index animals. High index animals produce lambs that grow faster, have less lambing difficulty, lower mortality and produce daughters that have higher litter sizes. The “big money” items are reduced mortality and increased lamb crops.

By consistently selecting high-index rams over time the genetic merit of the flock will increase regardless of any individual ram’s index falling. The most rapid progress will be achieved where all rams used on the farm are high-index.

Genetic index

A genetic index is the best estimate of an animal’s likely genetic merit. Selecting sheep with high accuracies from flocks that are well linked will increase the probability that the index will remain relatively constant.

Rams with lower accuracies are more likely to see changes as there is less information underpinning their evaluation. However, there will always be animals even at high accuracies that will change when new information comes to light. The new information may demonstrate that the original predication was not as accurate as the information available at that time predicted it to be.

Data quality index (DQI) is a measure of the amount of information

that an individual flock is supplying to the evaluation. Flocks that have low DQI percentages have only partially submitted data on all the sheep in their flock or they may have submitted the information late. The higher the DQI, the better.

July marks the start of the ram selling season. Sheep farmers selecting rams should firstly select rams on visual and ram soundness examination and then make their final decision based on the index of the ram.

Aim to select rams that are physically sound and have three or more stars on the overall index (terminal for lambs going for slaughter and replacement for lambs being retained as flock replacements). Also, select for a high star rating on other traits that are important to you, i.e. daughters’ milk, lamb survival, number of lambs born, days to slaughter, etc.

•More information about performance recording flocks and the indices of rams can be found at www.sheep.ie

Redstart reducing costs in Roscommon

This mix of forage rape and kale is a viable alternative to concentrates for sheep

James Kelly
Teagasc Advisor, Roscommon

Concentrates represent a large proportion of variable costs for lamb finishers. Sheep farmers are seeking alternatives, such as alternative forage crops, to reduce the costs of finishing lambs.

One such example is Roscommon sheep farmer Niall Byrne. Niall's farm is situated in Brideswell, in the south of the county, and is typical of farms in the area with dry, free-draining loam soils. Niall runs a 200-ewe midseason lambing flock along with 25 spring-calving suckler cows and a beef-finishing enterprise.

"In recent years, I have been incorporating small amounts of the forage crop, Redstart, into my system for finishing lambs," says Niall. "The advantage of growing Redstart is that the seed is relatively inexpensive and the regrowths are available for feeding ewes after the lambs have been finished."

Redstart is a hybrid brassica: a mix of a forage rape (which supplies rapid growth) and kale (which provides winter hardiness). To date, Niall says his experience has been very positive with improved lamb growth rates and kill-out percentages.



James Kelly (left) and Niall Byrne in a crop of Redstart.

Establishment and sowing

In 2018, Niall has sown 5ha of Redstart. Dry plots and those lands most in need of reseeded were selected. Plots were sprayed off with glyphosphate. Conventional cultivation methods of ploughing, power harrowing and discing were used to establish a fine, firm seedbed. Seed was incorporated at 4kg per acre. He expects a yield of 6t to 8t of DM/ha. Fertiliser usage included three 50kg bags of 10-10-20 with lime being applied to target pH of 6.5.

Grazing management

"Immediately after sowing, we divided the Redstart into five temporary divisions with electric fencing to allow for a rotational grazing system," says Niall. "This maximises utilisation and minimises waste of the crop."

Grazing is expected to begin in late July, which is approximately at the six- to eight-week growth stage. Three grazings is the target for this crop with chemical nitrogen being applied after each grazing.

Niall emphasises the importance of not overgrazing and damaging the

stem at any time as this greatly reduces the regrowth potential of the crop. Any of the crop not used for finishing lambs will be used for outwintering ewes.

Livestock management

Redstart is a forage brassica and is by nature low in iodine. Lambs destined for this crop for finishing will be administered an iodine bolus. They will be slowly introduced to the crop to avoid digestive upsets. Initially, lambs will be given one to two hours' access with this increased to full access at seven to 10 days. Fresh water and hay is made available to the lambs during grazing. The crop has the potential to finish 25 to 30 lambs per acre.

Niall is part of a recently established regional sheep joint programme between Teagasc Roscommon/Longford and local lamb processor Kepak Athleague. An open evening covering all aspects of the establishment and management of this crop of Redstart will take place on his farm on Tuesday 13 August at 6pm. All are welcome to attend.

Key messages

- The high-yielding hybrid brassica Redstart offers farmers an option to address the challenges of forage shortages and high-concentrate finishing costs.
- If sown early, the option for multiple grazing between August and February can be achieved.
- Care is needed in the grazing management of the crop to avoid digestive upsets.

Plan now to have adequate winter feed

Aidan Murray

Beef specialist, Teagasc Animal and Grassland Research & Innovation Programme

The difficulties of spring 2018 have certainly faded with the improved weather during May and June. Grass growth has been excellent if not a little difficult to control and many people have secured high dry matter first cuts. However, silage yields around the country have been variable depending on closing dates and whether silage ground was grazed in the spring.

Given the variability in yields and the fact that virtually all farmers used up all their fodder reserves this spring, there is a job of work to be done to try to build up these reserves over the next few months.

In 2013, following a similarly prolonged winter feeding period we found ourselves in much the same position. Our strategy to build up fodder reserves will be broadly similar this year. With first-cut baled or in the pit you will have a better idea of how silage stocks are looking going into the winter. But there is a very real need for people to complete or update a fodder budget during July and Teagasc highlighted this at Beef 2018 in Grange on 26 June.

The fodder budget will address how much fodder has already been made in 2018, what additional fodder is planned for second-cut/surplus bales and how many stock you intend to carry next winter. It will enable you to predict whether you are likely to be going into the winter with a potential surplus or a deficit.

This fodder plan can be updated again in late September/October to give a more accurate picture of the situation. This is an essential exercise if you are to minimise and manage any potential deficit. It will also allow you to devise a feeding plan from the start of next winter if you are a bit short on feed, which will lessen the effect.

Martina Harrington, one of our drystock advisors in Wexford, outlines a detailed fodder budget for one of her clients as he tries to secure enough feed for this winter and build up a reserve.



Although winter seems some way off, fodder planning is essential at this stage and should be reviewed as we go through the summer and autumn.

In the meantime, consider how you can grow the extra fodder you need.

- Ground intended for second-cut silage should receive 70 to 90 units nitrogen/acre with the higher amount going on newer swards. Aim to have second cuts finished up by 1 August.

“ The fodder budget will enable you to predict whether you are likely to be going into the winter with a potential surplus or a deficit

- Continue to spread 20 to 30 units nitrogen after each grazing. This will allow you to take out surplus grass, which will add to reserves. It also acts as a management tool to keep grass

quality optimum.

- If you feel that you will still be short of silage this winter you need to consider how you can balance demand and there are a number of options to consider:

- Can extra fodder be sourced locally at reasonable cost?

- Can I have empty/cull cows or store cattle fit for sale/slaughter early in the winter?

- Finishing animals can be fed on ad-lib concentrate and minimum silage.

- Use additional concentrates to stretch fodder supplies from housing.

- Is there an option for you to use alternative feeds such as fodder beet/maize silage?

Although winter seems some way off, fodder planning is essential at this stage and should be continually reviewed as we go through the summer and autumn. Your local advisor will be happy to discuss the various options with you.

CASE STUDY

Wexford farmer plans

This farmer's feed reserve was consumed. Now he's working to restore it based on a fodder plan

Martina Harrington
Teagasc advisor, New Ross

David Kinsella is a suckler farmer on 42ha (104acres) just outside New Ross in Co Wexford. David was one of the lucky ones in 2017/18 and he did not run out of silage but came incredibly close.

"I usually have cows and calves out in February. However, this year that was impossible," says David. "Our entire feed buffer was used up and this now has to be rebuilt." He has put a fodder budget in place to prepare for next winter. It includes extra forage production to build his reserve.

David is changing his system slightly. Up until now, he finished his heifers off grass in October and half the males as bulls under 16 months and the rest as bullocks of grass in October. Next year, he will finish all the male cattle as bulls and keep an extra 10 suckler cows. For winter 2018/19, he will have:

- Fifty-five suckler cows calving from January to March. David makes excellent quality silage in the region of 72 DMD, so the cows are to be restricted back to two-thirds of their allowance, hence 0.9t per head per month instead of the usual 1.4t of silage at 65 to 68 DMD.
- Thirty heifers to be finished off grass in the autumn. These are on 0.7t of silage per month, as is recommended with 3kg of meal on housing up to December, and then reduced to 1.5kg to turn-out.
- Twenty in-calf heifers, calving from January to mid-March. These are calving at two years of age and still have some growing to do. They are fed good-quality silage up to Christmas and then restricted up to calving. After calving, they get 2kg of meal.
- Thirty-five bulls to be finished under 16 months. These start on 3kg of meal and ad-lib top-quality silage up to January. They are built up to 7kg of meal by mid-February and then up on to ad-lib and finished in May/



June. This is a 210-day finish and on average they are eating 0.5t of silage per month.

How is this to be achieved?

- **First cut:** David made 12ha or 30 acres first cut.
- **Yield:** it yielded at least 10t per acre giving him 300t.
- **Date of first cut:** the first cut was taken on 1 June to allow him to close up for the second cut. This is important as he does not want the second cut to be too late as he wants to start to build covers in August for the autumn.
- **Stocking rate:** to achieve this he has pushed his stocking rate on the grazing area to 3,000kg per ha.
- **Fertiliser:** he is applying 27 units of nitrogen after every grazing.
- **Soil fertility:** all of his soil indexes are good, his pH is at 6.3 on average and the phosphorous and potassium indexes are at 3 or close to it. This allows his swards to achieve excellent

growth.

- **Growth rates:** at 3,000kg of live-weight per hectare, David needs a growth rate of at least 60kg DM per day. David is measuring his grass covers and on PastureBase Ireland in late May, he recorded a growth rate of 102kg DM per day. David has already taken out 78 bales of surpluses and at this growth rate he will have more bales from surplus paddocks in the coming weeks.
- **Second cut:** 15 acres will be closed for 6.5 weeks or so for the second cut. The second cut is trickier as growth rates are falling and demand is on the increase.
- **Fertiliser:** he will apply 2,500 gallons of slurry plus 2.5 bags of Sulpha Can for second cut. This will be taken out in mid-July (after 6.5 weeks) in the form of bales.
- **Yield:** the yield on this should be at least 7t per acre giving him 105t.
- **Surpluses:** if David removes silage from a paddock he will apply 2,500

to restore a buffer



Table 1: David's fodder budget winter 2018/2019

Animal type	Number of stock to be kept	Number of months	Number of months	Pit silage needed per head per month (tonnes)	Total tonnes of silage needed four month winter	Total tonnes of silage needed for a five-month winter
Suckler cows	55	4	5	0.9	198	248
In calf heifers	20	4	5	1.1	88	110
Heifers	30	4	5	0.7	84	105
U16 month bulls	35	6.8	6.8	0.5	119	119
Total					489	582

For bulls under 16 months finished over 210 days, their requirement is averaged above. In-calf heifers are fed ad-lib silage until Christmas, then restricted. Average intake over the winter 1.1t/month. David restricts his cows to two-thirds of their requirement and feeds straw to buffer. Total bales needed (tonnes multiplied by 1.25).

Table 2: Requirement for five-month winter

First-cut silage	300t
Second-cut silage	105t
Surpluses off paddocks	177t (221 bales)
Total	582



Next year, David Kinsella will finish all the male cattle as bulls and keep an extra 10 suckler cows. For winter 2018/19, he will have 55 suckler cows calving from January to March

gallons of slurry or 1.5bags of 18-6-12 to replace the P and K being taken off in the bales, while keeping in line with his nitrates allowances. This will also help to push on growth and yields.

"I need another 84t off surpluses to meet my target for a four month winter but to build a buffer I need 177t," says David. "This is the equivalent of 105 to 220 bales. I am aiming for the five month winter and already have 78 bales from surpluses. Now we have a budget we know we have to keep pushing fertiliser until we reach our target. If we don't reach the requirement, we will know early enough and can buy in bales, buffer feed with meals or sell some stock as a last resort."

As David sees straw as a potential problem in the coming years, he is re-designing and extending his suckler shed to incorporate more cubicles, with a lie-back for the calves and another tank.

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Buy feed or reduce demand?

Consider reducing stock numbers before calculating your feed requirement

Joe Patton
Dairy specialist, Teagasc Animal and Grassland Research & Innovation Programme

While the definition of a “normal” winter varies from region to region, the consensus is that at least four to six weeks’ surplus feed beyond normal winter requirements now needs to be available on every farm. Looking at the options, e.g. maize, whole crop, renting silage ground, it is clear that the cost is significant and will likely be at least €160/t to €180/t of dry matter (DM) in the yard.

For those farms needing to replenish fodder stocks, this means a substantial cash outlay may be needed to balance feed supply with herd demand for next winter.

Low production animals: a source of feed deficit

The potential return on buying feed should be carefully considered first before rushing headlong into assessing different options. Central to this is identifying any group(s) of animals within the herd that may be creating or contributing to forage deficits for little financial benefit. These will be the least productive cohort of animals in the herd e.g. high SCC cows, late calvers and empty culls dry cows retained on the farm.

Replacement heifers calving at more than 24 months old also have a significant effect on feed demand for no reward. The question must then be asked as to whether it makes economic sense to be buying forage to feed this type of stock.

There are two important points to be considered. Firstly, retaining this type of stock has a double effect on net forage deficits, in that forage available for conservation is reduced through the summer in addition to winter feed demand being increased. This may sound obvious but it can be missed; the impact on winter feed demand of holding these animals is often the only consideration.

Seemingly, small changes in stock numbers can have a marked effect on total forage conserved. Table 1 shows the effect on surplus bale supply of retaining late calving (May) cows, from calving until various different culling dates in autumn and for the year as a whole.

For a farm already in forage deficit, retaining five such animals from calving until mid-October will increase imported forage demand by around 60 bales next winter. The imported forage cost of keeping these extra five cows for the year is 110 purchased bales. Depending on stocking rate, total concentrate input per cow in the herd is likely to rise also as more grass deficits will arise.

The cash cost of feeding such surplus cows is estimated at €900 to €1,000 per annum, before overheads are accounted for. Remember, if the farm is in a net position of importing forage, then the cost of filling the feed gaps should be considered against these animals, not averaged across the herd as a whole.

The second major point to consider



is that potential margins from imported feed should be weighed against the milk sales value and likely future value of the lowest production animals in the herd, not the herd average. For example, chronic high SCC milking cows will have lower yield and may also reduce milk sales by transmission of infection to other cows. There is no justification for retaining these problem cows in a feed deficit situation.

Late-calving cows – keep or cull?

Decisions about late-calving cows can be less clearcut. This group tends to reach high peak milk yield in summer but has poorer lactation persistency and/or truncated lactation length, curtailing annual production. The effect is illustrated in Table 2, which shows milk production by month of calving for a typical spring calving herd averaging 440kg milk solids annually and drying off in mid-December.

May-calving cows achieved only 210 days in milk and produced approximately 25% to 30% lower milk solids for the year, while contributing to the requirement for purchased feed.

In relation to feed, if this herd were operating in a forage deficit situation, net milk value over purchased feed cost for the late calving group would be approximately €360 to €460 per cow (milk value minus €900 to €1,000 for purchased feed).

Table 1: Forage DM required for a May-calving cow from calving until different selling dates in autumn

Culling date	Early Sept	Late Oct	Mid-Dec	Annual forage total
Total forage DM	1,870	2,750	3,300	4,900
Surplus bales equivalent	8.5	12	15	22

Small changes in stock numbers can have a marked effect on total forage conserved.



When other direct per-cow costs are deducted (e.g. veterinary, breeding and consumables), it is likely that cash margin on surplus animals will be negligible. Such animals could be maintained in milk over the winter period, but for this system it would result in increased labour and cost to secure extra milk from a relatively small proportion of the herd.

On balance, the more favourable option for over-stocked farms may be to offload late calving cows to farms that have adequate forage in place – it is better to move the cows to the feed rather than the other way around.

When to offload? A final question for farms in this situation is often “when is the best time to offload this stock?” Figure 1 gives an approximation of this for May-calving cows in a typical 450kg MS spring calving herd operating in a net forage deficit, based on cumulative margin over feed cost. For simplicity, overheads are assumed to have been incurred by point of calving. Net forage DM saving at each point corresponds to the colour coding in Table 1.

At calving, May-calving cows will be minus €250 on milk value over feed. Break-even for the year occurs in mid-late July. Cumulative margin over feed rises by €80 to €100 per month in early lactation. Rate of change slows to around €50 per month later in the autumn due to declining daily milk yield and increased con-

centrate feeding.

By early September, when some cows which are scanned empty may be sold to reduce autumn demand, May calvers will reach around €200 more in cumulative annual margin over feed. Therefore, if sale price at calving is within €300 to €400 of likely autumn cull price the short-term cash difference of holding versus selling will be small.

These figures will differ for herds

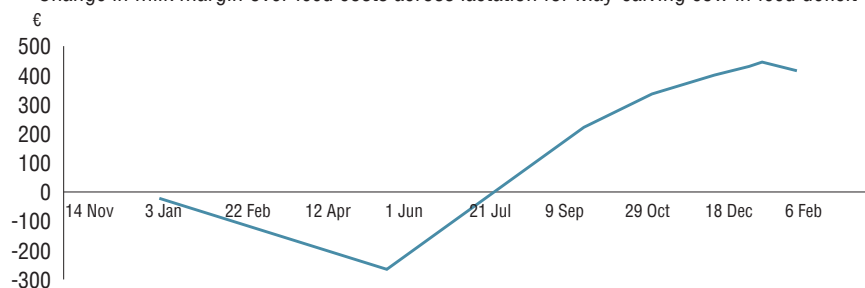
with plenty of forage available. However, for spring-calving herds that are struggling to build feed reserves, offering surplus late calving cows for sale would reduce the risk of forage deficits next winter. This will alleviate the pressure to secure forage stocks from external sources, and simplify system management overall. This should be considered before committing to purchase expensive forage of variable quality.

Table 2:

Calving month	Days in milk	Milk kg	Fat %	Pro %	Solids	Milk value €
Feb	294	5487	4.38	3.71	444	2113
Mar	276	5545	4.37	3.73	449	2144
Apr	244	5189	4.37	3.59	416	1953
May	210	4061	3.77	3.35	289	1367

Figure 1

Change in milk margin over feed costs across lactation for May-calving cow in feed deficit



Prepare and plan

This new entrant to dairying in county Westmeath says that preparation and planning is key to avoid a repeat of spring 2018

Martina Gormley
Dairy Specialist, Teagasc,
Athenry, Co Galway

Peter Hamm from Dumraney, Co Westmeath, says he is keen to avoid the fodder shortages he encountered in spring 2018. "The cost of buying silage, along with reduced cow performance and overall added work, meant that spring was less than enjoyable," says this recent entrant to dairying.

Peter started dairy farming in 2013, with a low whole-farm stocking rate of 1.6 livestock units (LU)/ha. This has been increasing steadily year on year to 2.6LU/ha in 2018. He is milking 80 cows at present, with 34 newborn to one-year-olds and 31 one- to two-year-olds.

For 2017, cows were out to grass by day on 2 February, day and night by 17 March and finished the first round on 10 April.

"Spring 2018 proved to be quite different with cows only out to grass day and night from 20 April with the first round finished by 25 April," says Peter. "This, coupled with increasing cows/replacements numbers in 2017 meant that feed had to be purchased. In the end, we had to buy 25t of wheat and barley mix, plus 170 bales."

Planning for 2018/2019

Firstly, the fodder requirement must be estimated. Be realistic about the number of months for which silage will be required. Secondly, there is absolutely no room for unproductive stock when you have a potential silage deficit.

Culling rate and replacement rate



Peter Hamm and Teagasc advisor John Hardy inspect a field which is being reseeded.

must also be established. Peter's herd is relatively young, has excellent genetics and management, which means that the culling rate is low. ICBF 2017 co-op shows that 520kg solids/cow was produced in 2017, from 850kg concentrates. This indicates that there were very few unproductive milking cows on the farm.

"I will cull empty cows (estimate six) and empty replacements (three) before housing," says Peter. He reckons that culling these nine cows in November will save 80t of silage.

For this farm, does the 5.5-month winter include a reserve? The land is considered dry and if a spring like 2014, 2015, 2016, or 2017 occurs, cows will be at grass in February and out full-time by 17 March and then the 5.5 months will include a reserve.

If a spring like 2013 and 2018 occurs, however, then there still will be silage available until mid-April – that's with no grass grazed at all in early spring. If spring 2019 allows for normal grazing to occur, then there will be a surplus of 100t to 200t.

Martina Gormley and Peter Hamm.



Long-term silage plans

Peter plans to be milking 120 cows by 2020. With a 20% replacement rate, this will leave the whole farm stocking rate at 2.4LU/ha. "To be 100% self-sufficient for grass and silage, the whole farm will need to grow 15t/DM/ha and utilise 12.5t/DM/ha," he says. All land is dry and results from PastureBase show that 15t/DM/ha has been grown on his owned land over the past three years.

Additional land

"When all additional land is reseeded and on target for lime, N, P and K 15t/ha should be achievable for this dry farm. However, this will take some time to achieve, especially across the additional land. We'll have to manage the whole farm well and be very disciplined with our whole farm fertiliser/lime plan or we could run into trouble."

Thinking back to his days as a jockey, Peter concludes: "A fall might not be your own fault but you certainly remember it and try not to repeat the experience!"



This reserve can be rolled on into the next year's requirements. Depending on the tonnes left over, this farm can then assess tonnes to be harvested for 2019/2020. One of the lessons learnt from 2013/2018 is that it is far better to have this reserve on hand than to be searching for fodder and paying double the price in March/April.

Where will 2018/2019 silage come from?

Peter has 20 acres of an out-block on a

long-term lease that will be cut twice and 27 acres of a two-cut silage crop secured.

This should provide 800t. To date, there has been 30 surplus bales taken from the milking block. As the farm has been growing 15t/DM/ha on average, we estimate that at least 100 bales will be made this year.

Peter has taken on additional land this year on the milking block. This land is currently being reseeded in two stages.

Due to this, it is slightly harder to

estimate the number of surplus bales, so being conservative is very important. There are 20 purchased bales left over from last year. This brings the total feed that should be available to 900t.

This leaves the farm short of 100t. A good option, if available, could be to buy 12 acres of a standing crop. If this option is not available, then buying beet pulp or hulls is another possibility. If availing of the second option use the pulp/hull in November/December/January to feed the dry cows.

Reducing silage intake

Feeding 3kg pulp/hulls and reducing silage intake by 3kg over 90 days across the 80 cows will save 100t fresh-weight (fw) of silage. For example, dry cow silage intake will be 10kg/dm/day (45kg fw).

Feeding 7kg (32kg/fw) silage plus 3kg pulp/hulls. The silage must be restricted to 7kg/dm (32 kg fw) and feed space must be available for this option to work.

Table 1:

	A	B	C	
Animal type	No. of stock kept over the winter	No. of months (include one-to two-month reserve for difficult weather)	pit silage needed/animal per month	Total tonnes of silage needed (AxBxC)
Dairy cows	74	5.5	1.6	652
0-1 year old	34	5.5	0.7	131
1-2 year old	31	5.5	1.3	221
				1,004

Build your own bail-out

Baled silage has huge advantages as a fodder reserve but wrap it well and handle with care

Dermot Forristal,
Teagasc Crops, Environment and
Land use Programme, Oak Park

The capacity to cope with extended winter housing, whether caused by soil conditions or delayed spring growth, is important. Concentrates can be used to “spin-out” limited fodder supplies, but securing forage reserves above what is needed for an average feeding period is sensible. There are a few points to consider when planning for forage reserves:

The level of reserve needed depends on factors such as climate, soil type, grass type (old pastures deliver less spring growth), animal enterprise, stocking rate, the ability to purchase forage and the scope to extend limited reserves with concentrate feeds.

While reserves can accumulate as a result of surplus grass growth, or due to short winters, it is important to actively plan to build a reserve.

Reserves to feed for an additional two to six weeks more than an average winter feeding period are common. In 2017/18, even six weeks' reserve may not have been adequate. However, prudent use of concentrates could double the feed period available.

Carrying a reserve from year to year does not imply that you make less use of grazed grass. Consequently, a reserve should not have a negative effect on production and little effect on costs. It is only utilised where needed, avoiding the need for emergency purchases and/or sward damage in times of shortage.

There are some extra costs associated with having a reserve. Some feed losses and extra storage costs are inevitable whether clamp or baled silage is used.

Bales or clamp?

The flexibility of the baled silage system makes it relatively easy to ensile limited areas of surplus grass. Similarly, a bale or two can be used where necessary. So baled silage is attractive as a reserve storage system. However, in many situations, baled silage deteriorates over the second storage season due to a loss of anaerobic conditions... air getting to the silage.

Silage correctly ensiled as a bulk clamp has one major advantage; where it is well preserved initially, undisturbed and well-sealed, it is usually at much less risk from storage losses due to air getting in. However, where the reserve is from a part-used clamp, aerobic losses before resealing can be significant. Also, the physical farmyard layout can make it difficult to access the reserve in the next feeding year, risking more losses every time it is resealed.

Where farmyards and feed storage areas are being changed, it is worth considering layouts that facilitate efficient storage of fodder reserves.

Managing baled silage as a reserve storage system

Baled silage has 50% of the silage volume within just 12cm (five inches) of the covering polythene. This makes the protection of the polythene seal vital with any baled silage system, but particularly if bales may be kept for a second season, which applies if they are being used as a reserve.

Any baled silage reserve which is not used in the first winter, should be used the following season and a new reserve built up.

Plan carefully where bales are being stored or stacked. If you can take bales for feeding from alternate ends of the bale storage area in successive years, then a single stack is workable. However, if access is more convenient from one side, it is useful to build a separate “reserve” stack to one side to allow it to be accessed first, if it is unused into a second season.

Consider using extra film on the bales used as a reserve. Teagasc research has shown that four layers of polythene is generally adequate in

single-year trials; but that there was always less mould recorded where six layers were used. Where the silage may be stored for more than one winter, consider using six layers on the bales. One Teagasc trial on two-season storage showed a huge reduction in surface mould where six layers was used on wet bales that subsequently became misshapen.

If six layers are to be used on the reserve amount (e.g. four weeks or 20% reserve assuming a five month winter), that will need to be continued each year as the reserve is recycled. The extra polythene would add about €1.25 per bale to the cost of the reserve bales or €0.20 per bale if the cost is spread over all bales stored.

If the planned reserve has not





Dermot Forristal advocates extra wrapping for long-term storage of bales.

stored well (polythene damage, with evidence of increasing mould), if there is an option it is better to use it or sell it (if there is a market) as it will deteriorate rapidly over a second season.

Attention to detail

While all bales should be carefully ensiled, be particularly careful with those that may end up being stored a second season. If a contractor is involved, his work must be monitored.

- Wilt rapidly to between 30% and 35% DM to maximise the DM in each bale and to produce well-formed bales that will retain their shape.
- Bale carefully to give tight, well-shaped bales and wrap carefully with sufficient film to give a full four or six

“ Where farmyards and feed storage areas are being changed, it is worth considering layouts that facilitate efficient storage of fodder reserves

layer cover (check wrapper control unit setting).

- Handle bales with extreme care; ensure that equipment does not damage the film and that operators are completely focused on protecting the polythene. Transport and store immediately after wrapping. Minimise the number of times the bales are handled. Stack the bales carefully. Examine them for damage and repair carefully where necessary.
- Prevent bird damage in the field and bird/rodent damage in storage.

Baled silage is expensive; it pays to conserve high-quality silage and it is vital to bale, wrap, transport/handle and store it carefully to avoid losses. This is particularly important if silage is to be stored for a second year.

Questions and options

When you have a shortfall, concentrate feeds can play a role in bridging the fodder gap

Siobhán Kavanagh
Teagasc Regional Manager,
Carlow, Wicklow, Wexford

Can concentrates play a role?

If you have 80% or more of the forage needed, then forage and/or concentrate can be used to fill the gap, depending on what's the best value and your feed space capacity.

Cost or value?

The total cost of any feed is the price plus any costs incurred from the time of purchase to feedout. However, the value of a feed is what it is worth at a particular point in time, compared with other feed sources that could be used to replace it, again allowing for all the costs incurred until feedout.

How do you value feeds?

The value of a feed is determined by the cost of energy and protein. Teagasc uses barley and soya as the base feeds, others use soya hulls and distillers' grains. The end result is very similar.

It's important that feeds are valued based on local prices. Contact your local advisor for advice or use the interactive calculator "relative value of feeds" on the Teagasc website.

What's the significance of quality?

- Firstly, define what quality means: with grass silage, good preservation is always important but the importance of dry matter digestibility will depend on the category of stock it is being fed to, e.g. dry suckler cows v autumn-calving dairy cows. This is where forage analysis and/or visual assessment of the ratio of leaf to stem is important.

- Get forages/wet feeds analysed for nutritional value: for conserved forages key parameters include preservation, dry matter, DMD and crude protein.

- If it is not possible to get laboratory analysis, get the history of the crop – sward quality (old pasture v reseed), when was it last grazed, cutting conditions, etc.

How much dry matter are you getting?

For example, if you are buying a wet feed at a quoted price and dry matter of €100/t and 50% DM, respectively. This feed is costing €200/t of dry matter. However, if that feed is only 45% dry matter, the cost is €222/t DM or 11% more than initially thought. You are still only paying €100/t but a bigger proportion of every tonne is water (550kg water per tonne v 500kg water per tonne).

If you are getting batches of a feed over the winter it's a good idea to measure dry matter regularly to ensure quality is consistent.

How much wastage will there be?

This can vary from 2% losses for stored grains to between 20% and 25% losses for a standing crop of grass silage from standing until feedout.

What risks are associated with buying a particular feed? Is the feed that you are buying of consistent quality? Barley straw, as in most years, is likely to be of consistent quality. However, baled silage is of very variable quality and is commonly referred to as "lucky bag" silage. Likewise, if growing a crop of forage rape, are you guaranteed good yield and quality, compared with buying straw and meals to fill the gap? The meals and straw option is less risky.

What is the cost of money?

If you buy a feed today and it's not to be fed for six months, there is a cost on that money.

Do I buy on a per-acre or per-tonne basis?

If you are buying a standing crop of any forage, it is important to buy it on the basis of yield rather than acreage. Would you buy ration from the local merchant without weighing it before leaving the yard? Buying on a per-acre basis is fraught with risk. It is difficult to estimate field yield



without measurement.

Likewise, for silage bales, there is significant variation in weight and dry matter content.

Have I overlooked any costs?

Costs incurred after buying any feed include storage costs; transport costs; storage losses; capital costs (i.e. borrowed money tied up in feed that may not be fed for six months); storage treatment costs (e.g. acid treatment); processing costs (e.g. rolling); balancing for protein and minerals and storage losses and labour/machinery costs for feedout.



Wholecrop cereal silage

Type of crops to use:

- Use high-yielding crops, minimum three, and preferably four, tonnes of grain per acre. A high-yielding winter wheat and a high-yielding spring barley crop will give similar (excellent) performance, provided grain yield is at least 50% of the total DM yield.
- Poor grain yielding crops will result in low-quality whole crops with a feeding value similar to 60 DMD silage.
- The feeding value of whole crop cereal silage can be inferior, or superior, to grass silage. The difference in nutritive value is predominantly determined by the content of developed grain. Winter wheat and spring barley, both at 50% grain in the harvested DM, can provide similar and excellent nutritive value.

Harvesting

- Harvesting should not take place until after the cereal grain has progressed beyond the milking-ripe growth stage. Harvest crops at the “soft cheddar” consistency.
- A direct, precision chop harvester is preferable. Mowing and picking up will lose grains.
- Only crops with a DM greater than 50% require grain processing, i.e. a grain cracker on the harvester.

Ensiling

- Preservation does not require an additive. An additive may be needed if the crop is cut very dry, i.e. grain DM less than 30% OR if the silage is to be fed out during warm weather, i.e. late spring/early autumn.
- Whole crops need to be well compacted and weighed down. A short chop length will encourage good preservation.
- A narrow pit is preferable. Lay vermin bait around the pit.

Valuing whole crop

Estimate grain yield from previous experience or by comparison with other crops harvested on the farm. Better still, harvest a strip of grain off the field, weigh it and measure the yield from the area harvested.

Growing crops on contract presents a win-win opportunity for livestock and tillage farmers. The new contract forage template, developed by Teagasc, provides a methodology where both the grower and the purchaser can be confident the contract contains the most important points and is laid out in an easy-to-use format ready to sign when completed. See Table 1 (left).



Continued on p26

Table 1: Valuing whole crop

Grain yield (4 tonnes @ €165/t ex combine)	€660
Straw value per acre on the ground	€85
Minus harvesting cost	-€110
Total value to the tillage farmer	€635/acre
Total costs to the livestock farmer = €630 + €115	€745
Expected utilisable yield of a 4t grain crop	5.1 t DM / acre
Cost per tonne DM	€146
Harvesting and ensiling	€115

Grain options

Costs

There are relatively small differences between the costs of the different grain treatment options, apart from drying. Approximate cost is €30/t, including processing, additive, storage losses and working capital cost. Treatment with urea-based products e.g. Home N'Dry and Maxammon costs €40/t to €45/t including processing. But there are additional advantages as the crude protein content increases and the higher pH may be an advantage for high concentrate diets.

Acid treatment

- It's popular to roll grain at the time of organic acid treatment using a crimping machine and store the grain aerobically in a clean, dry vermin proof store. This eliminates the workload attached to rolling at feed-out and ensures the acid is uniformly applied.
- To control insects, the grain temperature must be reduced after treatment, so some ventilation is necessary.
- For long-term storage of grain, rolled and treated off the combine, increase the application rate by 10%.
- For pulses, increase the application rate by 10%.
- When moisture content is less than 25%, it will be necessary to crack pulse seeds prior to treatment.
- Propcorn application rates are shown in Table 3.

Crimp

- Harvest grain at 30% to 35% moisture, crush the grain and store it anaerobically until feeding time. Under these conditions, it undergoes lactic acid fermentation.
- Suitable crops include barley, wheat, triticale, oats, maize, peas and beans.
- Crucial to the success of this system is achieving and maintaining strictly air-free conditions throughout storage, and minimising the duration of exposure to air during feed-out.
- Mould-inhibiting additives prior to ensiling, help to limit spoilage of the grain during feed-out.

Urea treatment

- Urea is the most common source of ammonia used to treat grain harvested at 16% to 20% moisture content.
- The whole grain is stored under sealed, air-free conditions (e.g. sealed beneath conventional silage plastic sheeting) to prevent ammonia loss.



A high-yielding winter wheat and a high-yielding spring barley crop will give similar (excellent) performance, provided grain yield is at least 50% of the total DM yield.

Table 2: Grain treatment options

Preservation option	Optimum moisture content %	Requirement for ventilation	Storage unit
Dried	14	Yes	Feed store or bin
Green	15-16	Yes	Feed store or bin
Organic acid treated	18-22	Yes	Feed store
Crimped	30-40	No	Ensiled anaerobically
Ammonia treated	18-22	No	Ensiled and sealed
Alkali treated	18-22	No	Feed store

Table 3: Propcorn application rates

Cereal grain moisture %	Litres propionic acid/t	Cereal grain moisture %	Litres propionic acid/t
16	5.5	22	8.5
18	6.5	24	9.5
20	7.5	26	11.5

- Products: HomeN'Dry or Maxammon. The advantage of these additives over the traditional urea is that the enzyme urease is present to ensure that the grain seed coat is broken down so that it does not pass through in the dung.
- Home N'Dry contains urea and ureases enzymes.
- Maxammon – buy the urea and enzyme separately and mix on-farm. Be careful to use feed grade urea only.
- The cost of both is approximately €27/t.
- The crop should be sealed down for four weeks and can be left open in a shed after that.
- Increases the crude protein content to between 14 and 16%, depending on

the starting CP%. Get it tested before, and after, the treatment to check the increase.

Caustic treatment

- Treat grain with sodium hydroxide (caustic soda) which disrupts the seed coat of grains so that the grain can be fed directly to cattle without further processing.
- Whole grain can be harvested at up to 30% moisture and soaked in, or sprayed with, sodium hydroxide solution.
- The grain is then stored aerobically.
- The grain is harvested at the conventional stage or slightly earlier (15% to 30% moisture).

More Irish than the Irish themselves?

These plant species are part of our national identity

Eileen Woodbyrne
Lecturer, Teagasc College of Amenity Horticulture

I recently asked some students to list plants that have a major influence on our lives. They came up with various grains and other food plants, some medicinal plants and others that we use for fibres. Papyrus featured as the source of early paper. But there wasn't much of an Irish flavour and I thought it might be fun to produce my own list of plants that define Ireland.

Solanum tuberosum

The humble spud. The failure of this crop brought famine to the country of course. The disease was first noted, and the pathogen identified in the 1840s, by David Moore, curator of the National Botanic Gardens in Dublin. Research continues and in the last few years a team of scientists, examining dried herbarium samples that were over 150 years old, decoded the genome of the particular strain of the pathogen that did the damage.

Brassica oleracea

After potatoes, cabbage is possibly the ultimate Irish vegetable. During the Famine, many people in Ireland relied on cabbage to keep body and soul together. It's high in vitamins, minerals, fibre and antioxidants. The total land area in cabbage today (around 680ha) has fallen in recent years but it still represents 16% (nearly one-sixth) of our field vegetable production.



Sphagnum species

Sphagnum moss is the most important plant involved in the formation of Ireland's boglands. The ecological significance of bogs has come into sharp focus in recent



Potatoes are one of the main foods that define Ireland.

decades. Bogs act as giant carbon "sinks" and alleviate the risk of flooding which is why efforts continue to preserve what remains of our bogs.

Chondrus crispus

This one's really not a plant at all, it's an alga. It goes by the common name of Carrageen moss. It's common on our rocky Atlantic coasts and is reputed to cure coughs, colds and sore throats. It can also be made into various dessert concoctions and it frequently appears on the Ballymaloe House menu.

Crataegus monogyna

The hawthorn or May tree – one of our most common hedgerow plants. It makes a great stock-proof barrier and its white flowers are a welcome sight along the roadsides in May. Its red berries or haws are a fantastic food source for birds. There are lots of superstitions associated with this tree. Most of our holy wells feature a hawthorn tree and we all know it's a home to the spirits of the fairies.

Many Irish people would avoid cutting down a hawthorn tree for fear of

incurring the wrath of the fairies.

Hordeum vulgare and Humulus lupulus

In Ireland 150,000ha of spring barley and 70,000ha of winter barley is sown every year. Much of it is used as feed but some is used to produce whiskey and of course the black stuff. Hops also feature in the making of that famous Irish brand. Ten million glasses of Guinness are downed every day across 150 countries.

Trifolium dubium or Trifolium repens

It may surprise you to know that there is some doubt as to what species of plant we actually mean when we talk about shamrock. Tradition suggests that St Patrick used this three-leaved plant to explain the Holy Trinity. I remember being told as a child that shamrock wouldn't grow anywhere but Ireland (not true of course – most of the clover species that are considered to be shamrock are common throughout Europe).

Lolium perenne and others

Much of Ireland's livestock industry is grass-based – nearly 3.7m ha of land in this country are in pasture, hay and grass silage. And of course we have over 300 golf courses and over 1,800 GAA pitches across the island. That's a lot of grass, keeping us fed and keeping us fit.

We need more newbies...

New entrants bring innovation and entrepreneurship, practical skills and positivity to the industry. However, they face considerable challenges. This EU project aims to support new entrants

Tom Curran

Farm Business Structures Specialist, Teagasc Rural Economy Development Programme

The average age of farmers in Ireland in 2016 was 55 years of age, while the number of family farm holders who were aged less than 35 years old was just 7.4% (one in 13). This age profile mirrors the statistics of other member states across the EU. New entrants are vital to the future of farming, rural communities and the wider agricultural industry in Ireland and across Europe.

The 'Newbie' project

Teagasc has collaborated with eight other EU member states in a new Horizon 2020-funded project called Newbie. The project which runs from 2018 to 2021, will focus on new entrants to farming right across the spectrum of farm-based enterprises.

Who are new entrants?

New entrants are defined in this project as anyone who starts a new farm business or becomes involved in an existing farm business. They are made up of a wide range of ages, agricultural experience and resource access. Newcomers and successors can enter farming at any stage in their working lives. They face common barriers: access to land, labour, capital, housing, markets, knowledge and the networks needed to acquire these resources.

Focus of the project

The Newbie project will focus on the challenge of enabling new entrants to successfully establish sustainable farm businesses by learning from new entrant farmers and highlighting the ways in which these challenges were overcome. This will include:

- Gaining a better understanding of new entrants who are choosing farming as a career.
- Highlight the pathways and modes of entry.
- Highlighting the businesses or enterprises that new entrants are involved in.
- Developing a European network of new entrant farmers.
- Establishing a unique platform by bringing together new entrants, successors, advisors, researchers, important regional and national actors and relevant stakeholders in national networks.

Information updates will be posted on the project website which can be found at the following link. <http://www.newbie-academy.eu/>

Activities

There are numerous activities planned over the lifetime of this project. The project will organise a diverse range of activities, both at national and European level.

- Two regional discussion groups will be established with new entrants and relevant stakeholders.
- Work is already under way to create a video channel with a library of inspiring new entrants' visual stories from all participating countries.
- An opportunity for travel on a bilateral exchange of new farmers and advisors across Europe.

If you are a new entrant farmer in any enterprise and you would like to get involved to share your experiences through the discussion circles during the project. You can email the project at newbie@teagasc.ie to be included in one of these discussion groups on new entrant farmers.

Discussion circles

At the core of the project are national discussion circles of about 50 participants (new entrants, successors, advisors, educators and research), which will meet twice a year in every participating country. In these networks, the new business models will



There are numerous activities planned over the lifetime of this project. The project will organise a diverse range of activities, both at national and European level



Teresa Sheehy (above) is starting a novel calf-rearing enterprise.

PROFILE: Teresa Sheehy, Co Limerick

Young, travelled, entrepreneurial, Teresa Sheehy from Feohanagh, near Newcastlewest in Limerick is typical of the new entrants the Newbie project aims to support. Teresa is starting up a novel calf-rearing enterprise. Having worked on a large-scale calf-rearing unit in New Zealand Teresa aims to offer dairy farmers the opportunity to outsource the rearing of their replacements. Teresa will take calves as young as 14 days and return them to their home farm in-calf at 24 months. "It's still fairly rare for calf-rearers to take animals that young," says Teresa who also works with DeLaval. "Keeping the heifers healthy is obviously the key point and I aim to take large groups from the same farm rather than mixing a lot of animals from different sources."

Teresa credits Teagasc advisor Joe Kellegher with helping her develop a business model based on rate-per-day, calf performance targets, etc. "The farmer pays for meal and vet costs, I provide fodder, labour and facilities," she says. "I think it's a system that will grow in popularity as it allows new entrants to get into farming without the need for an enormous amount of capital and dairy farmers can concentrate on fewer asks."



be presented and discussed, toolkits validated and experiences from the participants will be exchanged. Furthermore, the results of the national discussion circles will be shared and discussed with all discussion circles through a special monitoring and evaluation programme.

Steering groups

A steering group has been set up. The steering group will consist of 10 to 12 people meeting twice a year to discuss

the flow of the project at national level. They will contribute by building the discussion circles, prioritising topics for the discussion circles and can be regarded as ambassadors of Newbie.

The steering group will also guide the consortium towards the optimal selection for the international training.

The Newbie network will provide an international forum for young farmers who want to establish a career

in farming with the opportunity to engage with other new entrants and learn how barriers to entry might be overcome. The project will also highlight various types of farm-based enterprises which may be an alternative or addition to the existing enterprises on farms.

Interested in joining a European new entrant to farming network?

• Visit the Newbie website <http://www.newbie-academy.eu/>

TAMS II: the deadline approaches

Tim Hyde

Teagasc Crops, Environment and Land Use Programme

1 TAMS II progress to date: the Targeted Agricultural Modernisation Scheme (TAMS II) forms part of the Rural Development Programme 2014 to 2020 and is jointly funded by the European Union and the National Exchequer. The schemes involved in TAMS II are outlined in Table 1.

The scheme is designed to deliver the modernisation of farm infrastructure and equipment and covers all farming sectors.

TAMS II was launched in May 2015

and will be closed for applications on 31 December 2020. This means that we are into the second half of this TAMS II scheme and farmers who are interested in applying must start making plans to ensure they don't miss the deadline.

Progress of TAMS II to April 2018 is outlined in Table 2. The total amount paid out in TAMS II grant aid, at over €49m, equates to an average payment of €13,872 per applicant. If this is assumed as the average grant to be paid to the 16,017 valid applications submitted to date then the TAMS II expenditure would approximate to a total of €222m, which equates to 56% of the total TAMS II funding of €398m.

Table 1: TAMS II maximum financial allocations

TAMS II schemes	Maximum financial allocation
Animal Welfare Safety and Nutrient Storage (AWSNS)	€170m
Dairy Equipment Scheme (DES)	€50m
Low-emission slurry spreading (LESS)	€4m
Organic Capital Investment Scheme (OCIS)	€8m
Pig and Poultry Investment Scheme (PPIS)	€20m
Young Farmer Capital Investment Scheme (YFCIS)	€120m
Tillage Capital Investment Scheme (TCIS)	€26m
Total	€398m

Table 2: DAFM II report April 2018

TAMS II scheme status	Number of applications received	Number of applications rejected	Number of approvals issued	Number of payment claims received	Number paid	Total amount paid (million)
AWSNS	6,319	813	4,615	1,109	845	€6.5
DES	3,909	162	3,272	1,217	1,081	€13.70
LESS	1,479	50	926	362	340	€3.70
OCIS	749	71	597	233	201	€0.76
PPIS	201	22	155	39	26	€0.23
YFCIS	4,009	499	2,885	1,054	837	€21.80
TCIS	1,004	36	643	267	230	€2.60
Total	17,670	1,653	13,093	4,281	3,560	€49.38



2 TAMS II tranches: the TAMS II application process is divided into tranches which are usually three months in duration. This allows the Department of Agriculture, Food and the Marine (DAFM) to budget the allocation of funds over the six years. Applications are assessed after the closing date for each tranche. Ranking of applications takes place on a tranche basis. Unsuccessful eligible applications are carried over to the following tranche.

TAMS II grant rates

The maximum investment ceiling is €80,000 per holding and the minimum investment eligible is €2,000 per ap-



plication. The rate of grant is 40%. The investment ceiling is raised to €160,000 for DAFM-registered farm partnerships.

The rate of grant aid is increased to 60% for qualified young farmers less than 40 years of age. These applications are submitted under the Young Farmers Capital Investment Scheme.

Applications for this scheme may only be accepted from:

- Individuals farming in their own right, i.e. with their own herd number;
- Companies where one of the directors is an eligible young farmer; or
- Groups of persons that have formed a partnership recorded on the Depart-

ment of Agriculture, Food and the Marine Register of Farm Partnerships. A maximum grant aid of €40,000 (€60,000 for partnerships) under the Low Emission Slurry Spreading Scheme (LESS) is independent of the €80,000 in the other schemes.

TAMS II application procedure

If you are thinking of carrying out development work on your farm, contact your local advisor for guidance and advice on the plan before submission for planning permission. Consideration should be carefully given to the design, size, location, cost and compliance with regulations and DAFM specifications of the proposed

development.

Once you have a clear idea of what you want to build, you need to contact a draughtsperson or engineer to prepare the drawings and apply to the county council for planning permission or planning exemption.

On receipt of grant of final planning permission (C3) then the application is ready for submission to the DAFM. All applications must be submitted on line. Approval can take two to five months. Work on construction cannot commence until approval has been received as the DAFM will not grant aid work completed prior to approval.

» Continued on next page

TAMS II claims

• **Completion dates:** applications submitted from 14 January 2017 must be completed and claims must be submitted within six months of approval in the case of certain equipment and 12 months in the case of structures and fixed equipment from the date of issue of approval or by a date specified in the letter of approval, whichever is earlier.

Claims submitted one to 25 working days late are subject to a 1% reduction in grant aid per day.

Claims submitted more than 25 working days late are subject to a 100% reduction in grant aid.

A recent change to investments under the LESS has allowed an increase for all works to be completed and claims to be submitted from within six months to within 12 months from the date of issue of approval.

• **Deposits after application submission:** a further change to TAMS II terms and conditions allows deposits/expenditure paid on or after the date of submission of an application to be considered as eligible expenditure.

Any expenditure spent or investment work started/delivered before the date of submission of an application is ineligible. Installation or construction of an investment cannot commence until written approval has been issued to the applicant(s).

• **Payment process:** the Charter of Farmers Rights for TAMS II outlines that payment will issue when it has been determined that the work has been completed in accordance with the terms and conditions of the scheme. Approval for payment will be within two months following the receipt of the claim for payment (including valid supporting documents) and the completion of investments in accordance to specifications. Payment will issue within three weeks of approval for payment.

3 TAMS II application amendments and withdrawals: budgeting of the TAMS II expenditure is critically important. The DAFM requests applicants who have approval, but decide not to go ahead with their proposed investments, to submit a Withdrawal Form 12 available from the local AES office of the DAFM. This results in the withdrawal of either a proposed investment or a complete TAMS II application and allows an immediate transfer of funding for future applicant approvals.

Dissolution of DAFM-registered partnerships

Where a partnership dissolves in any period between the submission of an application and up to five years after the date of final payment, notification



Where a partnership dissolves in any period between the submission of an application and up to five years after the date of final payment, notification of the dissolution must be sent to TAMS II section, Johnstown Castle Estate, Wexford, within four working weeks.

tion of the dissolution must be sent to TAMS II section, Johnstown Castle Estate, Wexford, within four working weeks.

Change in identity

If, following the issuing of an approval, there is change or transfer of control of the holding from the original applicant to another entity (individual, partnership or company), then a "Request to amend TAMS II applicant details" form must be completed and forwarded to: TAMS section, OFI Division, Johnstown Castle Estate Wexford.

4 TAMS II notices: a safety notice must be securely fixed beside every new agitation point. The notice should be as close to the agitation point as possible. A typical agitation point safety notice is shown.

• **TAMS II plaque:** where the total TAMS II grant aid exceeds €50,000 the appli-

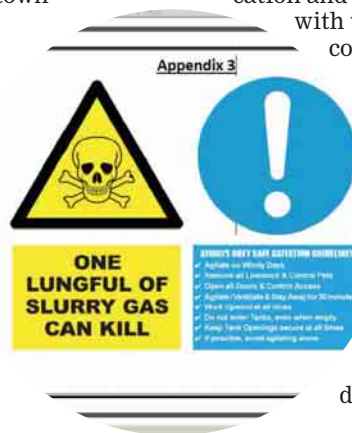
cant must affix a permanent plaque with the EU logo to the grant-aided investment visible to the public. The text on the plaque must contain the phrase – "The European Agricultural Fund for Rural Development: Europe investing in rural areas and containing information about the project".

• **Teagasc TAMS II Planning Service:** the Teagasc TAMS II Planning Service is available to clients on Teagasc Core Contracts.

This work requires great precision to ensure that the TAMS II application and claim comply with the terms and

conditions of each scheme and that the DAFM building specifications are followed as the on-farm development progresses.

Contact your local Teagasc office or advisor for further details.





Martin McCullough
with Robin McNutt

TAMS Tillage Capital Investment Scheme (TCIS) update

Martin McCullough
Teagasc Carndonagh

Unlike other TAMS schemes the Tillage Capital Investment Scheme (TCIS) came late to the party and the first tranche closed for applications on 30/06/2017. Since then there has been another three tranches with the next due to close on 07/09/2018 (date subject to change).

Before you consider any farm investment you need to be sure you can afford it. Ask yourself the following:

- Does farm profitability justify the investment?
- What are my machinery costs per acre or ton of grain?

You must justify any investment based on farm and crop profitability and available funds because even with a 40% grant you have to pay 60% of the cost which can be still be a substantial sum of money.

TCIS Eligibility and Grant-aid:

All growers with 15 hectares of “eligible” crops (tillage crops and temporary grassland years 1-3) on their BPS application in the year of application or the preceding year are eligible for

40% grant-aid on specific tillage items up to a maximum investment of €80,000. Young Trained Farmers are eligible for 60% grant-aid on approved items but they must submit an application under the Young Farmer’s Capital Investment Scheme YFCIS and not the TCIS. Registered Farm Partnerships have an investment ceiling of €160,000.

The investment ceilings of €80,000 and €160,000 are the maximum investments that can be claimed across all the TAMS schemes with the exception of the Low Emission Slurry Spreading LESS scheme.

Recent changes to TCIS scheme:

There have been a number of recent changes and additions as follows:

GPS Steering Control was previously only available for tractors but is now also available for combines. Grant-aid covers both new machines and also for retro-fitting older machines. DAFM cost for steering control on a new machine is €9,400 per unit and €10,800 for retro-fitting



Continued
on p34

an old tractor or combine (imported vehicles must have a VRT certificate to be eligible).

Both mounted and trailed sprayers were previously grant-aided with full electronic or GPS control. In this tranche both mounted and trailed sprayers are grant-aided provided they are "GPS ready". The costing has been reduced by €3,500 per item to reflect this. Sprayers are costed according to tank capacity so for example a 1,200 litre mounted sprayer with GPS control is costed at €30,288 while the "GPS-ready" model is costed at €26,788. A note of caution: the "GPS-ready" machine will only be eligible for grant-aid provided the applicant already has a DAFM specification GPS unit on the farm and it must be connected to the new sprayer.

Heavy Cambridge Rollers are grant-aided as an individual item or along with paddles. Rollers are costed per linear metre of working width so for example a 6m roller is costed at €12,752 and with paddles at €18,764.

A Furrow Press is costed per linear metre of working width so for example a 4m roller is costed at €35,948.

As was the case with sprayers both mounted and trailed Fertiliser Spreaders were previously grant-aided with full electronic or GPS control. In this tranche both mounted and trailed Fertiliser Spreaders are grant-aided provided they are GPS ready.

The costing once again has been reduced by €3,500 per item to reflect this. Fertiliser spreaders are costed according to tank capacity so for example a 2,500 litre (2.5 ton) mounted spreader with GPS control is costed at €20,250 while the "GPS-ready" model is costed at €16,750.

A note of caution: the "GPS-ready" machine will only be eligible for grant-aid provided the applicant already has a DAFM specification GPS unit on the farm and it must be connected to the new spreader.

Frequently Asked Questions:

Is VAT included in the DAFM costings?

No. If you are not VAT registered and you purchase mobile equipment the VAT cost must be included in your calculations as you will not be able to claim it back. This will influence the decision to invest in new equipment or not.

Is the grant 40% of the cost?

Yes and No. The Dept. has costed all items eligible for grant-aid. For example the Dept. costing for a 6m Heavy Cambridge Roller is €12,752. Provided your receipt equals or exceeds this you are eligible for a maximum grant of €5,100 (€7,651 if you are an eligible Young Trained Farmer). If the roller

Take-home messages

You must justify any investment based on crop and farm profitability.

- **Closing date for next TCIS tranche is 07/09/2018 (subject to change by DAFM).**
- **VAT is not included in DAFM costings: if you are not VAT registered you will not be able to recoup VAT on mobile equipment.**
- **You need Full Planning for Grain Stores; Rainwater Harvesting Tanks and Continuous Flow Dryers before you can apply TAMS.**
- **Payment for a grant-aided item must come from a bank account owned by the applicant and the amount paid must match the receipt or invoice.**
- **All applicants must have completed a half-day Farm Safety Code of Practice course or a Level 6 "Green Cert" within the last five years prior to the application date in order to get paid grant-aid. If not, your payment will not be processed until you have completed a course.**
- **Any imported tractors or combines being retro-fitted with GPS or Yield Monitors must have a VRT Certificate to be eligible for TAMS grant.**

costs less than €12,752 you get 40% (or 60%) of the receipt cost.

Is there a minimum investment required for the grant?

Yes. The minimum investment is €2,000 per application but you can apply as many times as you like up to the investment ceiling of €80,000 (or €160,000 for partnerships).

Is planning needed for any of the investments?

Yes. If you are applying for grant-aid on either Grain Stores or Rainwater Harvesting Tanks or Continuous Flow Grain Dryers you need Full Planning Permission or a Letter of Exemption from Planning from your Local County Council before you apply.

How can I make an application?

You can only apply on-line either yourself or via an authorised FAS agent. Any documents required with the application have to be scanned and uploaded onto the Dept. on-line system. They will not accept any documents by post.

Is training required?

Yes. All applicants must have completed a half-day Farm Safety Code of Practice course (given by Teagasc or other approved Training Providers) or have completed the Level 6 "Green Cert" within the last five years prior



to the application date. If you need to do a course you will not be paid until it has been completed.

Is the value of a "trade-in" allowed for the scheme?

Yes provided the machinery is "like for like". The receipt submitted for TAMS claim must include a full description of the traded-in item including the value, the make and model and dimensions. For example, if the new item costs €10,000 and you paid €7,000 and the trade-in value is €3,000 you will get 40% (or 60%) of €10,000.

Once approved how much time do I have to complete the investment and submit a claim for payment?

You will have either six or 12 months to complete the investment and submit a claim to the DAFM depending on the item applied for.

Items eligible for the TAMS TCIS grant-aid include:

- Farm Safety Investments: replacing hinged doors with a sliding or roller door; retrofitting roof lights with safety cages; rewiring existing farm buildings and installing yard lights.
- Rainwater Harvesting Equipment.
- GPS Machinery Control: steering controls for tractors or combines and yield monitors for combines.
- GPS Standalone Units.
- Sprayers: mounted or trailed with either electronic or GPS controls (or be "GPS-ready").
- Self-propelled Sprayers.
- Min-till equipment (cannot be PTO driven): disc and tine stubble cultivators; min-till drills; direct drills and strip-till drills.
- Heavy Cambridge Rollers (with or without paddles) and Furrow Press.
- Grain Stores and Ventilation Equipment.
- Grain Treatment Equipment: grain dryers; elevator and auger systems; grain mills and liquid and powder grain treatment applicators.
- Salad Potato Harvesting Equipment.
- Fertiliser Spreaders: mounted or trailed with full GPS (or be "GPS-ready").

Full details and costings of all TCIS items are available on the Dept. website at www.agriculture.gov.ie/farmer-schemespayments/tams/

PROFILE: Robin McNutt, Co Donegal

Robin McNutt farms approximately 95ha of winter and spring cereals in Newtowncunningham, Co. Donegal. Since the TAMS TCIS scheme opened in 2017 he has used it as a means of investing in farm machinery on a phased basis depending on crop profits, available funds, and a need to update existing equipment for his farm.

"Our machinery costs are low at €75 per acre as we have well-maintained older machinery," says Robin. "We applied for TAMS TCIS for a Heavy Cambridge Roller in the 1st TCIS tranche which closed on 30/06/2017. We received DAFM approval one month later on 28/7/2017 and were given six months to complete the investment. I completed the Farm Safety Code of Practice course on 26/01/2018 and submitted the claim the same day and was paid three weeks later."

In the tranche that closed on 23/02/2018, Robin applied for a Disc Stubble Cultivator. He received DAFM approval on 01/05/2018 and was given 12 months to complete the investment and submit a claim. He is awaiting delivery of the Disc Cultivator. In the latest tranche that closed on 08/06/2018 he applied to replace a hinged door with a roller door.

Robin is using the TCIS scheme as a means of updating tillage equipment for newer more efficient models on a phased basis so that there is no large expenditure at any one time. It also means he should be paid the grant-aid for any one item before he buys the next one. Looking to the future he intends to replace a 10-year-old fertiliser spreader with a GPS model in the next TCIS tranche and may also invest in a new GPS sprayer before the scheme closes.

Re-establishing native woodlands

Fuelling the passion for growing quality oak

Jonathan Spazzi
Teagasc Forestry Development Office

Irish native woodlands came to the verge of disappearance at the beginning of the 1900s when less than 1% forest cover remained. Since then, following the foundation of the Irish State, remaining native woodlands have been secured and, in more recent years, new woodlands have been planted, primarily thanks to the Native Woodland Establishment Scheme.

New opportunities for landowners

The scheme supports the planting of oak mixtures and other native broadleaves and, to date, it has delivered over 1,000ha of new woodlands on farms with further funding available for up to 450ha per annum in the coming years. The scheme is of interest to landowners for a number of reasons:

- It allows for forestry development in areas where water or landscape sensitivity currently rule out other afforestation schemes
- It offers the highest forestry premium to farmers (up to €680 ha/year) to reflect the wide range of benefits to the local environment and communities.
- It offers great water quality protection and landscape enhancement potential, especially important in areas of high-status water quality and where tourism forms a central part of the local economy, eg in southwest Kerry

However, in general, it requires lower elevation and better land, com-

Continuous Cover Forestry (CCF)

CCF is a management approach which allows for the production of quality timber without the loss of forest cover at any time. It is ideally suited to broadleaves forest and relies on selective harvesting and progressive renewal either through natural regeneration or small-scale planting.

This management style is, in many respects, similar to the process of managing a herd for beef production as it involves harvesting the "biological increment" with selective breeding of the "tree herd". Once in place, CCF can deliver regular cashflow to the owner with a range of additional environmental/landscape benefits arising from long-term forest retention.

Following a recent Forestry-Programme-Mid-Term review, the Forest Service is now offering funding to develop existing plantations through CCF.

The new scheme is offering three payments of €750/ha as part of a 12-year forest plantation transformation plan.

pared with other forestry options and this can represent a significant barrier for landowners. In this context, the Department of Agriculture, Food and the Marine will explore the potential of an additional forestry fund for establishing new native woodlands.

Biodiversity, landscape protection and timber production

Biodiversity and ecosystem services are at the core of the scheme. How-



ever quality hardwood production is also envisaged through continuous cover forestry (CCF).

Hardwood production relies on achieving long straight stems with a minimum 40cm diameter at breast height (DBH). Looking at the twisted poor form of many of our older, mature native trees, we might conclude that no hardwood production potential exists.

However, a quick check at our historical records shows that large quantities of quality oak were produced in Ireland (and exported to Britain) in past centuries.

The current poor form of many mature trees is a consequence of continued removal of quality trees and lack of management.

Also recent research, on a novel

Summary of native woodland scheme establishment premium and follow-on support measures

(All establishment costs plus four-year maintenance costs are covered)

Annual premium <10ha= €665/ha for 15 years

Annual premium >10ha = €680€/ha for 15 years

BPS premium retained on the same land. Income tax exempt. USC and 4% PRSI deductible – PRSI liability for applicants under 66 years old.

Forest road development grant available within three years of first thinning: €1,000/ha

Broadleaves first thinning grant (woodland improvement) available from when trees reach 8m height(12 to 15 years of age): €750/ha

Broadleaves second thinning grant(woodland improvement grant) typically four years after first thinning: €500/ha



Paddy Gleeson measuring one of his selected oak trees on impressive 24cm DBH at 24 years of age with 1cm diameter growth adding on every year – well in excess of expectations.

approach to oak management, reveals that quality timber can be achieved earlier through greater intensity thinning: a process called “free-growth-active silviculture”. In this scenario, minimum saw-log dimensions for oak and other native broadleaves can be reached much earlier than expected, with significant implications for profitability.

Recent public presentations by forest researchers of the results of Oak “free growth” 50 year-Crumblant trials in Wales and 30 year-Fernelmont trials in Belgium revealed that oak saw-log dimensions is achievable far earlier than expected.

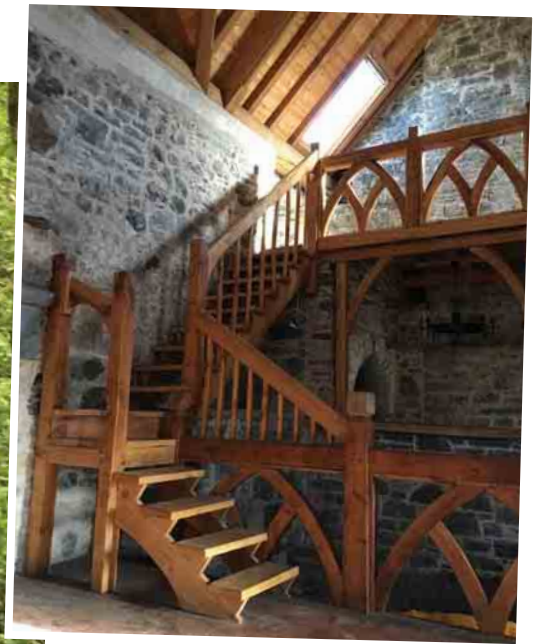
Paddy Gleeson runs a small farm in east Clare, just outside the village of Bodyke including a 6ha mixed oak forest planted in 1994. I first met him

in 2009 and found his enthusiasm and passion for his young plantation infectious.

Nature

“All my life I had an interest and appreciation for wildlife and nature,” says Paddy. “Some 24 years ago, I decided to take advantage of the introduction of forestry grant and premium schemes to diversify income and habitats on my farm. The primary objective was to provide for wildlife while at the same time growing hardwoods for the long term. The natural choice was to plant mix broadleaves with primarily native species. Which is what did.”

The land selected at the time was wet, heavy clay-rushy fields, difficult to farm.



Refurbishment of a 15th century tower on the Sykes farm using on-farm mature oak. The tower is now rented out for wedding receptions and other functions.

Since then, Paddy has taken a very hands-on approach to managing his forest including two commercial firewood thinnings, the development of a local firewood supply from his forest and collaborations with the local school for nature education. “Working in the forest gives me great satisfaction... and makes money, too,” says Paddy.

Paddy has fully utilised the forestry support schemes available to him over the years such as a forest road development grant and the first thinning grant. He is now about to apply for a second thinning grant and is also considering the new CCF forestry scheme announced this year.

The initial forestry premium payments finished in 2014 but the forest continues to make money for him through regular firewood sales.

The next thinning is planned for 2019 and Paddy is looking forward to harvesting higher-value oak as fencing strainers as the trees are now rapidly “fattening”. This is a direct consequence of his proactive management of past 10 years which has maintained quality trees in a “free growth” dynamic state.

“For me, planting oak on my farm was the right choice as it provides me with the right balance of income, legacy and personal satisfaction,” concludes Paddy.

To further assist with the economics of early hardwoods management, and to bridge the gap until higher value saw log maturity, Teagasc forestry researchers are currently involved with the EARTH project funded by CO-FORD, led by NUI Galway and with GMT Letterfrack Furniture College, to explore potential to add value to small-medium diameter hardwoods.

Teagasc data privacy notice

Your privacy is of paramount importance to Teagasc, the Agriculture and Food Development Authority (hereinafter referred to as “Teagasc”, “we”, “us” or “our”). It is important that you know exactly what we do with personal data we collect from you, or that you provide to us, why we gather it and what it means to you.

This document is provided to you in line with Teagasc's obligations under the General Data Protection Regulation (GDPR), which is effective from the 25th of May, 2018. From that date, the GDPR, together with applicable Irish requirements, amends existing data protection law and places enhanced accountability and transparency obligations on organisations when using your information. The GDPR also introduces changes which give you greater control over your personal data, including a right to object to processing of your personal data where that processing is carried out for our business purposes.

In this Data Privacy Notice, the term “Personal Data” means data relating to a living individual who is or can be identified either from the data or from the data in conjunction with other information that is in, or is likely to come into, our possession, and includes personal data as described in Data Protection Legislation (as defined below).

This summary details the most important aspects of how we use your data and what rights you have in relation to your personal data. You can get more details by viewing our full Data Privacy Policy at <http://www.teagasc.ie/privacy>, in Teagasc offices, or by post to Teagasc Head Office Oak Park, Carlow, R93 XE12.

1. Information we gather from you

We fully respect your right to privacy in relation to your interactions with Teagasc and endeavour to guarantee to be transparent in our dealings with you as to what information we will collect and how we will use your information. Also, we only collect and use personal details where we have a legal basis to do so under the Agriculture (Research, Training and Advice) Act 1988 (the “Agriculture Act”). Information in relation to personal data collected by Irish entities is available on www.dataprotection.ie, the website

of the Irish Data Protection Commissioner (“DPC”).

We will handle your Personal Data in accordance with Data Protection Legislation. “Data Protection Legislation” means the Data Protection Acts 1988 and 2003 and Directive 95/46/EC, any other applicable law or regulation relating to the processing of personal data and to privacy (including the E-Privacy Directive), as such legislation shall be amended, revised or replaced from time to time, including by operation of the General Data Protection Regulation (EU) 2016/679 (“GDPR”) (and laws implementing or supplementing the GDPR).

In order to use many of our services you must provide personal data to us including a full name, password, contact details, details of your farm including physical information (such as grass growth, size of farm etc.) or/and financial information (such as annual income of farm and profitability).

Teagasc is a Data Controller (as defined in Data Protection Legislation) in respect of your personal data. We have a legal basis for processing your Personal Data under the Agriculture Act.

We endeavour to keep all personal data that you provide to us accurate and up-to-date. As such, you must tell us about any changes to such information as soon as possible. You can update your information through your contacts with our staff or your use of our websites at any time or you can contact us to update your information by using the details in the ‘How to Contact Us’ section of this Data Privacy Notice.

2. Why we collect/have access to your information

Teagasc only processes your Personal Data (“Your Data”) for the purpose of: the delivery, development and enhancement of advice, training and scientific research on agriculture and food in accordance with the Agriculture Act and personalising the way our content is presented to you over all forums, ensuring that the content is presented in the most effective manner for you.

This includes the use of Your Data for the following purposes:

Data Privacy Notice

How we protect and manage your personal data



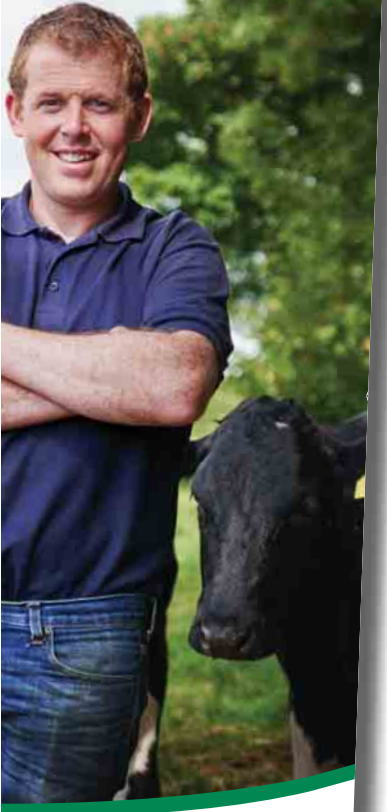
teagasc
AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

- 2.1 Scientific research on agriculture and food for example for grass growth forecasting;
- 2.2 Your data may be shared with other members of Discussion Groups of which you have agreed to become a member;
- 2.3 Your data may be aggregated to provide Regional or National statistics (for example for Grass Growth (PastureBase Ireland) or Farm Profitability (eProfit Monitor));
- 2.4 Data use is necessary in relation to a service or a contract that you are entered into with us.

3. Are there cases where we may use your information to contact you

We may contact you:

- for administration reasons (e.g. to provide you with reminders or to notify you that a particular service or activity has been suspended, or in re-



that we notify you and get your consent first. You will be given the opportunity to withhold or withdraw your consent for the use of your Personal Data for purposes other than those listed in this Policy.

4. What rights do you have

As a data subject, you have the following rights under Data Protection Legislation and we, as Data Controller in respect of your Personal Data, will comply with such rights in respect of your Personal Data:

- the right of access to Personal Data relating to you;
- the right to correct any mistakes in your Personal Data;
- the right to ask us to stop contacting you with direct marketing;
- rights in relation to automated decision taking;
- the right to restrict or prevent your Personal Data being processed;
- the right to have your Personal Data ported to another data controller;
- the right to erasure; and
- the right to complain to the DPC if you believe we have not handled your Personal Data in accordance with Data Protection Legislation.

These rights are explained in more detail in the Teagasc Privacy Policy which you can get online at <http://www.teagasc.ie/privacy> but if you have any comments, concerns or complaints about our use of your Personal Data, please contact us (see 'How to contact us' below). We will respond to any rights that you exercise within a month of receiving your request, unless the request is particularly complex or cumbersome, in which case we will respond within three months (we will inform you within the first month if it will take longer than one month for us to respond). Where a response is required from us within a particular time period pursuant to Data Protection Legislation, we will respond within that time period.

5. Withdrawal of consent

If you no longer consent to our processing of your Personal Data (in respect of any matter referred to in this Policy as requiring your consent), you may request that we cease such processing by contacting us via the 'How to contact us' facility referred to below.

6. Who we share your information with

We may disclose your personal information to any business unit, company or other legal entity under the control and direction of Teagasc.

As stated above, with your consent, we may also use your data, or permit selected third parties to use your data, to provide you with information

about goods and services which may be of interest to you and we or they may contact you about these. We reserve the right to access and disclose personal data in compliance with Data Protection Legislation.

We may also use service providers to help us run the services available from Teagasc. Any third parties who access your data in the course of providing services on our behalf are subject to strict contractual restrictions to ensure that your data is protected, in compliance with Data Protection Legislation.

Your Personal Data may be transferred to, stored at, or accessed from a destination outside the European Economic Area ("EEA") for the purposes of us providing the services available on the Website. It may also be processed by staff, operating outside the EEA, who work for us, another corporate entity within our group, or any of our suppliers. By submitting your Personal Data, you explicitly consent to this transfer, storing or processing. We will take all steps reasonably necessary to ensure that your Personal Data is treated securely and in accordance with the Teagasc Data Privacy Policy. The safeguards in place with regard to the transfer of your Personal Data outside of the EEA are the entry by us into appropriate contracts with all transferees of such data.

7. Retention of personal data

Any of your Personal Data that you provide to us will be kept and stored for such period of time as we deem necessary taking into account the purpose for which it was collected in the first instance, and our obligations under Data Protection Legislation. In general, your Personal Data will be retained by us for as long as you are a client of Teagasc and for 10 years thereafter.

8. How to contact us

If you need to contact us with regard to any of your rights as set out in this Policy, all such requests should be made in writing to Data Protection Officer, Teagasc, Oak Park, Carlow, R93 XE 12, or by email to dpo@teagasc.ie. Unsubscribing from electronic communications can be achieved by pressing the 'unsubscribe' (or similar button on the electronic communication received).

We will appoint and maintain a Data Protection Officer in accordance with Data Protection Legislation. The contact details of our current Data Protection Officer are: Data Protection Officer, Teagasc, Oak Park, Carlow, R93 XE 12, or by email to dpo@teagasc.ie.

sponse to a question that you ask us);

- to provide you with advice and information about our services or activities. You should only receive e-newsletters or similar correspondence and updates from us if you have agreed to same as part of the registration process or in response to any contact you have made with us, e.g. on our Website, by email or via the 'How to contact us' facility. It will be made clear to you where you have made these choices, for example, by providing tick boxes for you to decide whether you wish to receive e-newsletters;
- to invite you to participate in surveys about our services (participation is always voluntary).

Where we wish to use your Personal Data in any other way, we will ensure

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